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THE UNIVERSITY OF ALBERTA

DISABLED STUDENTS' PERCEPTIONS OF THEIR INTEGRATION AT UNIVERSITY

by

Ⓒ Florence Kooiman Spratt

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF Master of Education

IN

Special Education

DEPARTMENT OF EDUCATION PSYCHOLOGY

EDMONTON, ALBERTA

FALL, 1987

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled DISABLED STUDENTS' PERCEPTIONS OF THEIR INTEGRATION AT UNIVERSITY submitted by Florence Kooiman Spratt in partial fulfilment of the requirements for the degree of Master of Education in Special Education.

Charles Norman
Supervisor

P. Mulcahy

Date August 27, 1987

DEDICATION

To my husband, Douglas. You spirited me on with your loving encouragement and complete acceptance of my limitations.

ABSTRACT

This study examined disabled students' perceptions of their academic, social and physical integration at the University of Alberta, and compared their perceptions to those of a matched group of nondisabled students. As a result of numerous developments in society with respect to disabled people, more disabled students are enrolling in postsecondary programs. This study determined to find out if these students are experiencing meaningful mainstreaming.

Forty-one disabled students were matched to 41 nondisabled students on: age, sex, year in university and faculty. The disabled students had a mobility, hearing, or visual impairment, or a learning disability. Both groups of students responded to a questionnaire dealing with their academic, social and physical integration. Disabled students were also asked to rate disabled student services they used. Services and accommodations for disabled students similar to those mandated in the United States are available on this campus of over 25,000 students.

It was found that both groups' perceptions were not significantly different in how they perceived their academic, social and physical levels of integration. The groups' grade point averages were similar; their use of academic, social and physical services and resources were comparable; and their opinions of their academic, social and physical levels of integration were similar. However, trends were found in which both disabled and nondisabled students perceived themselves to be doing better than disabled students as a group in academic integration. The disabled students viewed their social, out-of-class skills to be weaker than the nondisabled students.

The two groups' similarities indicate that the disabled students have fewer differences than may be expected. The disabled students appear to be fitting in with the academic, social and physical contexts of the University to levels comparable to that of the nondisabled students. The data also suggest the disabled students perceived their disabilities to be structural rather than functional. It follows that successful integration of disabled students can be attained by meeting their physical or structural needs.

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I. INTRODUCTION

Postsecondary student populations in North America are becoming increasingly heterogenous. Various social, cultural and legislative developments in the past twenty years have encouraged more nontraditional students to enroll in colleges and universities. As a result of these developments, present day campus populations include older students, part-time students, disadvantaged students, minority students, foreign students, and disabled students (Hartman, 1981; McBee, 1982).

During the past ten years, students with disabilities have been adding to the diversity of colleges and universities (Belowich, 1983; Scales, 1986). Students who have a disability may have a physical impairment (e.g., hearing, vision, mobility or speech) or a learning disability. Appendix A includes definitions and characteristics of each of these disabilities.

Some of the developments that have contributed to the increase of disabled students in postsecondary institutions are as follows:

1. The American civil rights movement. Society became aware that it was discriminating against disabled persons and was preventing them from pursuing educational opportunities that were enjoyed by the rest of society (Gearheart, 1980).

2. Legislation. In the United States, changes in legislation mandated that disabled, school age children were to receive public education in the least restrictive environment and that qualified disabled adults were to have equal access to all postsecondary programs (Belowich, 1983; McBee, 1982; Scales, 1986).

3. Medical and technological advances. Progress in medicine and technology has made it possible for more disabled persons to survive into adulthood and to become better able to achieve academic goals.

As a result of such developments, the number of students with disabilities in postsecondary institutions has been increasing. Progressive developments in attitudes, legislation and technology are likely to continue to encourage more disabled persons to enroll in colleges and universities in North America (Bryan & Becker, 1980).

Many disabled students have more and differing needs than nondisabled students. Services are provided and changes in and around campus have been made to meet those needs. For example, a scribe or tape recorder can be used for students who need help with notetaking; architectural changes are made to sidewalks, entrances to buildings and rooms to ensure full accessibility; and tutoring is provided to help upgrade academic and technical skills.

A variety of adjustments and services for postsecondary students with disabilities are being implemented in most American and Canadian postsecondary institutions (McGeough, Jungjohan & Thomas, 1983). It would appear that, when services are provided, disabled students will become better integrated on academic, social and physical levels. In other words, the disabled students are being provided with an environment in which they "have the option to participate fully and to interact totally with society" (Shanhouse & Yates, 1980, p.51).

At the same time, other aspects of the college or university have been identified in the literature which may continue to impact upon disabled students' integration levels. For example, the open admission policy of some institutions may place disabled students at a disadvantage because these students may enter university without having their needs identified. The attitudes of teaching staff and nondisabled students toward disabled students is another issue since misunderstanding or avoidance by nondisabled teachers or peers can negatively affect disabled students' academic and social integration.

At the University of Alberta, disabled students have access to numerous support services. These services are provided to meet their academic, social and physical integration needs. This study's purpose was to understand how well the University of Alberta's disabled students perceived their integration in the campus community, given the services available to them. The assumption made in this study was that, when barriers are removed and appropriate services provided, a student's physical or learning limitations are minimized. As a result, a student's perceptions of his/her integration should be similar to those of nondisabled students.

A second purpose of the study was to examine the disabled students' ratings of the services they received. It was expected that the results would provide insight on how these services are in fact used and how well they meet the students' integration needs.

General Research Questions

1. How do disabled students view their academic, social and physical levels of integration?
2. How do disabled students' perceptions of their integration in academic, social and physical areas compare to those of nondisabled students?
3. Which disabled student services do disabled students use while attending the University and how do they rate these services?

Significance of the Study

The importance of this study is that the results will provide a better understanding of disabled students' perceptions of their integration. Differences and/or similarities between the disabled and nondisabled student groups can provide direction on integration issues that need to be considered. If differences are found between the two groups, improving the disabled students' chances for successful integration could be considered. The disabled students' ratings of the services they received will demonstrate which services are being used, and how they see the services meeting their integration needs.

II. LITERATURE REVIEW

The purpose of this chapter is to review the background events and current developments and issues relating to the integration of disabled students in postsecondary institutions. In the literature, many terms and phrases are used to describe the meaning or components of the integration of disabled students in regular education settings. Some examples are "full participation in campus life" (Bohan & Humes, 1986; Penn & Dudley, 1980); "equal educational opportunity" (Marx & Schmidt, 1980; Nathanson, 1983); "barrier free environment" (Shanhouse & Yates, 1980); "program accessibility" and "reasonable accommodation" (Sprandel, 1980); and "full and equal access for persons with disabilties" (Babbitt, Burbach & Iutcovich, 1979; Marx & Schmidt, 1980). Although these terms define integration to an extent, they do not encompass the full meaning of integration as it is used in this study. Haring and McCormick's (1986) definition of mainstreaming, however, is equivalent to the meaning of integration used in the present study:

> If handicapped students are accepted by their peers and teachers and if they have constructive interactions with their peers and teachers, only then can their presence in a regular classroom and in other school settings with their nonhandicapped peers be termed mainstreaming. (p. 114)

Haring and McCormick's definition of mainstreaming implies more than disabled students' presence and participation in regular education settings. They are saying that, although presence and participation have taken place, acceptance and constructive interactions must occur. The perceptions of disabled students and not those of peers or teachers determine whether acceptance and positive interactions have occurred. It is the disabled students' views or perceptions of the extent of their integration in the campus setting that is the focus of this study.

As the present study took place in a Canadian institution, it is appropriate to highlight Canadian material regarding program accessibility and integration of disabled students in this chapter. Unfortunately, the majority of literature related to students with disabilities at postsecondary levels has been based in the United States. One of the reasons for this is that American legislation has mandated full accessibility for disabled persons in all public institutions, including colleges and universities. This is not so in Canada. As a result of the United States legislation, a surge of publications and research related to disabled students has been generated. The focus of this research activity has been on ways to ensure full integration or participation for disabled students, and to delineate issues related to disabled students' interactions with nondisabled students. Therefore, the source of the majority of the literature cited in this review will be based on United States data.

Although much of the literature has been published in the United States, publications based on similar activity in Canada have also occurred. The data in these publications indicate that disabled students in Canadian postsecondary institutions are benefiting from developments similar to those in the United States:

1. Similar teaching methods at public school level are being used in both countries. "Teachers of special education in [the U.S.A. and Canada] employ the same techniques, programs, program variations, and assessment methods" (Hammill, Bartel & Bunch, 1984, p. ix). With very similar service delivery models in both countries, one important development is that increasing numbers of disabled students are becoming qualified to enter postsecondary programs.
2. In both countries, legislation supports the right of disabled students to attend public education programs. The Canadian Charter of Rights and Freedoms guarantees that

disabled persons have "equal benefit of the law without discrimination". Also, most provincial Education Acts and Human Rights Acts provide grounds for disabled students to claim access to equal public education (Cruikshank, 1983). These laws are similar to the equal protection clause in the American Constitution, which has been used to support disabled students' access into postsecondary institutions.

These service and legislative similarities between the two countries are likely to result in similar developments for disabled students in postsecondary institutions. Therefore, American-based literature will help the reader understand the historical background, services, and current issues that concern Canadian students with disabilities at postsecondary levels.

In this literature review, specific aspects related to the integration of disabled students in postsecondary settings will be discussed. They are: a) Historical Developments. This section describes developments in the United States and Canada which have made it possible for disabled students to enroll in postsecondary programs. Included in this section are descriptions of influences on society which allowed increasing numbers of disabled students to enroll in postsecondary programs and how admissions policies of some institutions inhibited enrollment of potential students with disabilities. b) Needs and Services. This section introduces disabled students' needs that require services to ensure successful integration while at college or university. The services that are available to meet those needs are also listed. c) Issues. This section identifies several issues that affect the integration levels of disabled students in postsecondary institutions; and, d) Perceptions of Integration. This section describes studies which have examined disabled students' views of their experiences and/or integration while at college or university.

Historical Developments

Public awareness and legislation. Within the past decade, increasing numbers of disabled students have enrolled in postsecondary programs. There is general agreement that two trends in the United States have together made this increase possible. They are: a) changing attitudes of society toward disabled persons; and, b) legislative changes related to American education and welfare of disabled persons (Babbitt & Thompson, 1981; Francis, 1983; Gearheart, 1980; Haring & McCormick, 1986; Hartman, 1981; McBee, 1982; Shworles, 1977; Turnbull & Turnbull, 1982). In Canada, changes in attitude and legislation that concern disabled persons have also taken place, but only after significant progress in this area had occurred in the United States (Cruikshank, 1983).

In a public address during the Fourth National Conference of the Association on Handicapped Student Service Programs in Postsecondary Education (herein called AHSSPPE), Hartman (1981) summarized how changes in attitude and legislation have mutually changed postsecondary populations to include greater diversity. She said, "It is the 'will of the people' which fostered the legislation which enabled postsecondary institutions to grow in diversity if not in tradition" (p. 17). In this section, the development of these trends will be briefly described.

In the United States, the black civil rights movement played a major role in changing society's attitudes about the segregation of minority persons. Historically, this movement was based on the equal protection guarantee within the Fourteenth Ammendment of the American Constitution. The right for all individuals to be equally protected was challenged by racial minorities who, prior to 1954, were segregated from most educational programs, activities, and services that white people enjoyed. (The American Supreme Court had decided, in 1896, that, although the aged, minorities and disabled were inherently equal, they were best kept separate from the mainstream of society.) In 1954, the American Supreme Court stated that segregation stops progress toward equal protection for minority groups. It then authorized minorities to be fully integrated into all public programs, events and places, including education. That is, minority persons could participate in all of these activities. However, it didn't go far enough to ensure that discrimination was eliminated.

Then, in 1964, the Civil Rights Act prohibited racial discrimination within any publicly funded program. This act, along with the Declaration of 1954, set the stage for a society ready to advocate full integration and nondiscrimination for disabled persons as well. However, it was not until the mid 1970s that the law prohibited exclusion and/or discrimination of disabled persons from any publicly funded program, including postsecondary institutions. In calling for physical accessibility and academic integration into postsecondary programs that were inaccessible, Tuscher and Fox (1971) echoed the views of the civil rights advocates by stating, "The provision of access to higher education for physically handicapped persons is based on the philosophy that every member of a democratic society has the right to an education commensurate with his interest and ability" (p. 13).

According to Turnbull and Turnbull's (1982) chronology of public changes for the rights of disabled students to education, legislative acts that allowed disabled students to enter regular schools were followed by judicial decisions that enforced integration. These decisions represented the culmination of civil rights protection for disabled persons in three ways. First, the Rehabilitation Act (1973) removed legal blocks preventing disabled students' full accessibility to publicly funded higher education. Second, Public Law (P.L.) 94-142 (1975) guaranteed free and appropriate education for all disabled students at elementary and secondary levels. Third, the Rules and Regulations of 1977 described how the disabled students' rights were to be implemented (Alexander, 1979; Scales, 1986).

To summarize, the right for disabled students to enroll in postsecondary programs was brought about by changing public attitudes toward disabled students as well as legislative changes reflecting those attitudes.

Influences on society. Public attitudes and legislation were the main forces behind the securing of disabled students' right to postsecondary programs. However, several developments occurred which influenced society' attitudes and which resulted in positive effects on accessibility for disabled students of all levels of education (Haring & McCormick, 1986; Kirchner & Simon, 1984). These developments took place during this century and up to the time P.L. 94-142 and the Rehabilitation Act were mandated in the United States. For example, disabled war veterans were making society aware of their financial and vocational rehabilitation needs. This awareness prompted society to become more aware of the needs of persons whose disability occurred in adult developmental periods. Education became a recognized means of helping adults with disabilities become more independent.

Advocacy for disabled students' right to education was also becoming a strong force in the United States. Parent groups and asssociations representing persons with specific disabilities were lobbying for the education of disabled students at all levels.

Elementary and secondary schools were providing disabled students early intervention services such as speech and hearing therapy, physical therapy and learning centres. As a result, more disabled students were able to consider further education (Hameister, 1984).

In addition, modern medical and technological developments made it possible for disabled students to attend postsecondary programs. These developments increased both the life expectancy and independence of disabled persons (Tuscher & Fox, 1971). A college or university degree was no longer an impossible dream.

In the move from the Industrial Age to the Information Age, a postsecondary degree became essential for obtaining desirable careers, and enrollments in postsecondary programs increased. As late as the 1950s, a high school diploma was the end of the educational experience for most individuals. During the 1960s and 1970s, however, post-high school training was becoming necessary to guarantee a desirable occupation. With progress in medicine, technology, legislation and society's attitudes toward disabled students, college and university opportunities were becoming attractive and possible for disabled students (Kirchner & Simon, 1984). Disabled students recognized these changes and began to enroll in postsecondary programs.

To summarize, rehabilitation programs, advocacy groups, medical advancements, early intervention and technological progress have resulted in increasing numbers of disabled students attending colleges and universities.

Developments in Canada. In Canada, there is no legislation at the federal level supporting disabled persons' right to equal access to public education. Several provincial governments have developed policies which address disabled students' educational rights (Csapo & Goguen, 1980; Hammill, Bartel & Bunch, 1984; Loewen, 1986; Winzer, Rogow & David, 1987).

Although the provincial policies are helpful, deficiencies still remain in Canadian education of disabled students. For example, in rural areas, disabled students may not receive adequate resources for their education needs; and no federal legislation has been developed that is similar to the American Rehabilitation Act of 1973 or P.L. 94-142 of 1975, to ensure disabled students are supported equally by law (Brown, 1977; Csapo, 1980; Hammill et al., 1984). These deficiencies may directly or indirectly prevent qualified disabled students from being eligible to attend college or university programs.

Despite these deficiencies in the political system, Canadian educators have been influenced by the American special education system and are adopting similar teaching methods and procedures for disabled children (Hammill et al., 1984; Winzer et al., 1987). The effects of American influences are being identified by the relatively large numbers of disabled students attending Canadian colleges and universities, with numerous services available to them (McGeough et al., 1983). In fact, the services that are provided to these students are very similar to those provided to disabled students in American colleges and universities.

McGeough et al. (1983) surveyed postsecondary programs in North America to determine the number of disabled students enrolled and the services available to them. Their report was for the the 1981-1982 school term. Postsecondary institutions were given university or college status, and were then categorized by a population range (e.g., 0-5000; 5001-10000, etc.). The number of disabled students enrolled in each institution was reported by a range as well (e.g., 0-10; 11-25, etc.). By taking the median in both total student population and disabled student population for each institution, percentages of disabled students in postsecondary programs were estimated.

From the ranges given for Alberta postsecondary populations of disabled students, it was estimated that 1.6% of the total student population (i.e., colleges and universities) were students with disabilities. It is likely that this percentage is smaller than the actual percentage of disabled students enrolled. There are several reasons to indicate that a large number of disabled students attending postsecondary programs in North America were not even included in McGeough's statistics: (1) the universities' admission applications do not require students to produce information regarding a disability (Sprandel, 1980); (2) some students may be reluctant to report their disability and/or needs (Faigel, 1985; Vogel, 1982); (3) unassertive students may not be aware of, or willing to seek out available services; (4) others do not report themselves as disabled as they may be unaware of their disablility (Sprandel, 1982); (5) some LD students may not have been identified in earlier grades and/or in university (Cordoni, 1982; Sprandel, 1982); (6) some disabled students manage very well without specialized services and/or do not wish to be classified as disabled (Bohan & Humes, 1986); and (7) universities whose admission policies do not require an entrance exam which could identify disabled students may be uninformed regarding entering disabled students. For these reasons, there are likely many more disabled students attending postsecondary institutions than are recognized.

Not only are there a large number of undiscovered disabled students attending colleges and universities, but Bryan and Becker (1980) have predicted an increase in this number. In their discussion of the purpose of specialized services for disabled students they stated:

> The number of handicapped students involved in postsecondary settings will continue to increase as a result of medical advances in lifesaving techniques, federal legislation, mainstreaming, and the changing attitudes of society and of handicapped persons toward equal opportunity and access to postsecondary education. (p. 21)

In their article discussing the services required by disabled students, Bryan and Becker (1980) argued that disabled students are fully capable of providing contributions to society that are equally significant as those given by nondisabled students. According to their view, specialized assistance will, in effect, neutralize the students' limitations, and will allow their academic potentials to develop more normally. With these services readily available to disabled students, the trend of increased numbers of disabled students on postsecondary campuses may well continue. Blosser's (1981) essay on trends, forecasts and planning needs for disabled student services was in agreement with Bryan and Becker's thesis. He added that students with severe and "hidden" disabilities (e.g., functional quadriplegia and learning disabilities) will also increase proportionally as appropriate services are provided to them in elementary and secondary school, as well as in college and university.

As numbers of disabled students increase on the campuses, it becomes important to know how well these students perceive their integration. That is, to what extent do they feel part of the university's academic, social and physical setting? Are their perceptions of their integration any different from the way nondisabled students see themselves? Answers to these questions may provide an understanding of how far social and legislative changes have affected disabled students' educational progress.

Admissions. While a variety of developments and influences on society have made it possible for more disabled students to enroll in colleges and universities, some stumbling blocks may remain. Although services for disabled students are in place in many postsecondary institutions, their admission policies and procedures may prevent disabled students from entering an academic program and/or experiencing an opportunity to achieve academic success.

Disabled students may encounter difficulties when applying for enrollment, whether they apply to universities and colleges with open admissions (i.e., criteria for admissions not based on test scores or grades) or to those with admissions standards (i.e., test scores or grades used for admissions decisions). On the one hand, institutions with open admissions policies make it possible for disabled students to withhold information regarding their disability.

At the same time, however, the institution is not able to identify incoming disabled students and direct them to available support services in advance (Bryan & Becker, 1980; Sprandel, 1980). The institution may then be unprepared to meet the unique needs of prospective disabled students (King, 1982). In addition, initial services such as registration, scheduling and orientation assistance might not be provided to disabled students unless they seek out these services before or during the first days on campus. Without these initiation services, disabled students may become confused and frustrated. It becomes important for institutions with open admissions to provide information regarding special services to all prospective students (McBee, 1982). This way, any student with a disability may be oriented to available services in advance.

Conversely, universities with standardized test requirements may not have testing alternatives for each of the different disabling conditions (Bailey, 1979; Gerber & Reiff, 1985). For some disabled students, a low score on a standardized test without accommodation for their disability may prevent them from being accepted to the institution.

Institutions that use students' high school class ranking as an indicator for acceptance can make successful entry extremely difficult for motivated students with disabilities (Phelps, 1980). For example, a motivated, above average disabled student may have been given a low class ranking because he/she was seen as having less potential for success than nondisabled peers or a low class ranking may have been the result of a lack of adequate provision of services to meet his/her program needs. As a result, these students' grades might not meet admission standards.

For colleges and universities with standardized testing for admissions criteria, regulations in the United States insist that accommodations must be made for students with disabilities so that their test performance reflects their knowledge rather than their disability. Some tests now accommodate for students with visual impairments and/or students who require more time. However, all disability conditions are not yet accommodated for in all entrance tests (Gerber & Reiff, 1985). It follows that LD students' "hidden disability" could disqualify them from college or university entrance if no accommodations are provided (King, 1982). If an institution accepts requests for testing accommodations for physically disabled students but not for LD students, inconsistent practices may result. If the LD student must present evidence of his/her learning disability, he/she may lack the financial means and/or the time to supply the documentation before admissions test deadlines (Gerber & Reiff, 1985).

The accommodations made in the entrance requirements for disabled students will have an influence on how the college or university is viewed as being aware of disabled students' academic potential. In the United States, qualified disabled students are, by law, protected from discriminating admissions practices. To ensure protection, American colleges and universities are being evaluated for their compliance with the regulations.

In addition to the questions regarding how disabled students view themselves and their integration, it would be helpful to know whether the University of Alberta's open admissions policy has any adverse effects on disabled students. Examining this critical component of the University's service system from the disabled students' perspective may provide some understanding of factors related to their integration levels.

To summarize, disabled students' access to regular postsecondary programs has been made possible through various social, legislative, medical, educational and technological changes in society. As a result of these changes, and despite some remaining stumbling blocks, more disabled students are attending colleges and universities across North America (Hameister, 1984; Sarno, 1986; Scales, 1986). In addition, with legislation mandating that services be provided for these students by postsecondary institutions, it is expected that the number of disabled student populations will continue to increase.

Services

After American legislation mandated equal opportunities for disabled people in all areas of society, much of the related literature provided explanations on how to meet the legislative requirements (Bohan & Humes, 1986). Many barriers were described as preventing full access to the physical campus, social activities and academic programs. To remove these barriers, disabled student advocates suggested a variety of measures, including: providing special student services; reconstructing building and campus grounds; modifying course requirements and test procedures; utilizing help from community organizations; implementing awareness projects; and publishing information on available services (Alexander, 1979; Bryan & Becker, 1980; McBee, 1982; Wright, 1984). All of these measures were intended to serve students with mobility impairments, learning disabilities, hearing impairments, and visual impairments. (Definitions of each disability are included in Appendix A.)

Services provided in postsecondary institutions are intended to meet the integration needs of students. For disabled students, more needs are created because they have physical or learning limitations that can adversely affect their integration while at university (Bryan & Becker, 1980). Students with different disabilities often have similar needs, such as a notetaking aid or changes in assignment requirements. However, the actual service to meet each need may differ with each disability, and, sometimes, with each student. For example, a notetaking aid for learning disabled or visually impaired students could be a tape recorder while for mobility or hearing impaired students, it could be a scribe. However, some learning disabled students might prefer a scribe, some mobility impaired students might prefer a tape recorder, and some visually impaired students might prefer to use a Braille typewriter.

This section will describe which services are used to meet the special integration needs of students in four categories of disabilities (i.e., mobility, hearing, visual and learning disabilities). The decision of who receives which service is made on the basis of need as well as the characteristics of each student's disability. This process is reflected in Anderson and Coons' (1979) article which described methods of identifying needs for disabled students. They stated,

> A design philosophy that places the users' characteristics and needs at the center of the planning process will lead eventually to the creation of an environment that is accessible to handicapped people as well as to the ablebodied. (p. 61)

Appendix A includes a description of the needs and characteristics of each type of disability.

Students with mobility impairments. For the mobility impaired students, many architectual and physical barriers exist around campus which require modification to make education more accessible. Since the physical environment has a direct influence on the degree of movement a mobility impaired student can have, a lot of attention has been directed toward eliminating physical barriers. A second area of attention has been in altering mobility impaired students' academic programs to help them meet deadlines and program requirements (Babbitt et al., 1979; Griffith & Speer, 1982; Heliotis & Edgar, 1980; Shanhouse & Yates, 1980).

According to Shanhouse and Yates (1980), a "barrier free environment" means that the environment should be free of all obstacles that could prevent disabled students "from enjoying the full and free use of that environment" (p. 43).

This means that a student who uses a wheelchair or crutches may need services in the following areas:

a) registration (e.g., mobility assistance and advice);

b) transportation (e.g., adapted vehicles, reserved parking, curb cuts, mobility assistants and snow removal of walkways);

c) architecture of academic, residence and recreation buildings (e.g., accessible entrances of buildings and rooms, properly sloped ramps, accessible restroom facilities, fire warden evacuation aid, and lowered telephones, elevator buttons and water fountains);

d) physical (e.g., classroom equipment, adapted work tables and carbonized note paper);

e) academic (e.g., extensions or modifications on assignments and examination procedures, attendants, notetakers and interpreters); and,

f) financial aid for education living expenses and specialized equipment

(Bryan & Becker, 1980; Demetrulias, Sattler & Graham, 1982; Heliotis & Edgar, 1980; Shanhouse & Yates, 1980). These services eliminate the major barriers mobility impaired students may face while in college or university. As a result, they are provided with an equal chance of succeeding in their studies.

Students with learning disabilities. Postsecondary students with learning disabilities make up the smallest group of disabled students, and have received attention only very recently in the literature (for example, see Barbaro, 1982; Cordoni, 1982a, 1982b; Putnam, 1984; Sprandel, 1982; Vogel, 1982). One of the main reasons for this recent interest is that the children who were first identified as learning disabled (in the 1960s) are now becoming adults (Demetrulias et al., 1982; Vogel, 1982). Research is therefore beginning to focus on their unique characteristics and special needs as adult students (Cordoni, 1982; Nayman, 1982; Putnam, 1984; Sprandel, 1982; Vogel, 1982). The literature shows that the range of special characteristics and needs of learning disabled adults are just as varied as among learning disabled children.

Since LD adults have at least average ability, many wish to pursue academic careers. However, without services to compensate for their learning disabilities, a college or university would be inaccessible. In an article discussing the need for services for LD college students, Vogel (1982) stated:

> Even though Section 504 and the LD pressure groups have not yet succeeded in making many post-secondary institutions accessible to the learning disabled, there is a growing awareness, and many institutions are in the process of planning, initiating, or developing LD college programs. (p. 519)

By late 1984, 95% of American colleges and universities were providing services for their LD students (Weinstein, 1984). Opportunities for successful integration for these students began to appear possible.

LD college students require services in the following areas to meet their academic and social integration needs:

a) recruitment and admissions information (e.g., directing potential LD students to appropriate personnel services);

b) orientation (e.g., acquainting LD students to academic programs and campus life);

c) diagnostic testing;

d) priority scheduling (e.g., advance registration or allowing course preferences);

e) taped text and readers

f) tutoring (e.g., one-to-one or group study sessions);

g) academic modifications (e.g., alternate teaching procedures and course requirements and exemptions);

h) peer support group (e.g., self-help/sharing experiences and compensating strategies);

i) workshops to improve socialization skills;

j) counselling (e.g., emotional, social and/or vocational

decision making);
k) housing (e.g., a good study environment)
(Barbaro, 1982; Brown, 1982; Cordoni, 1982b; Faigel, 1985; Kahn, 1980; King, 1982; Orzek, 1984; Vogel, 1982).

To summarize, during recent years, services have become available to accommodate for LD postsecondary students' diverse characteristics and needs. If necessary, these services are maintained throughout the LD student's university career.

Students with hearing impairments. For hearing impaired students to have equal access to postsecondary programs, language and communication barriers must be removed. The hearing impaired student often experiences barriers similar to those facing newly arrived foreign students. Communicating, understanding and using conversation and written English, as well as understanding the technical language and lecture formats of their academic courses are often very difficult for hearing impaired students.

The National Technical Institute for the Deaf (NTID) initiated extensive research related to the development of special services to meet the needs of mainstreamed hearing impaired students at the Rochester Institute of Technology (RIT) (Wilson, 1980). Services they developed and used were soon used in other institutions as well. Fred Wilson (1980), who taught at NTID, identified the areas of need which most hearing impaired students experienced and the services that could be used to meet those needs. The following are areas of need and examples of related services for adult students with hearing impairments:

a) admissions criteria adjustment (e.g., alternative entrance assessments);
b) English as a second language (ESL) courses;
c) tutoring and notetaking for classroom lectures and labs;
d) sign language interpretation;
e) lipspeaking services;
f) adaptive teaching strategies (e.g., facing classroom,

teamwork with interpreters, alternative assignments when necessary, etc.);

g) FM hearing aid systems (e.g., an instructor microphone and student receiver);

h) visual signals installed for emergency purposes;

i) acoustic treatment and adequate lighting of classrooms;

j) captioning on instructional films;

k) financial support (i.e., for equipment and vocational rehabilitation).

In addition to these services, students who are deaf or hearing impaired may prefer transliteration services over sign language interpretation. In transliteration, the mode of the presentation is changed from auditory to visual without any change in the language (Morkert and Funckes, 1985).

To summarize, services for the integration of postsecondary students with hearing impairments are designed to compensate for communication barriers they experience in their academic and social activities.

Students with visual impairments. In the college or university setting, a student's vision is seen as essential for almost all academic activities. For blind or visually impaired students, visual information needs to be translated into auditory or tactile information. Otherwise, integration for blind and visually impaired students would be impossible. Students with visual impairments have needs for services in the following areas:

a) orientation guides (e.g., tactile/raised, large print and/or color contrasting maps of campus grounds and buildings, with supplementary cassette tapes);

b) study aids (e.g., taped lectures and test materials, large print, readers, closed circuit T.V. (i.e., print enlarged on a T.V. monitor), magnifying glasses, talking computers and calculators, speech compressors, etc.);

c) adjustments in teaching style (e.g., instructor's

examples, notes and outlines on the blackboard and demonstrations are translated into an oral medium);
d) assignment modifications (e.g., extensions for completing assignments/tests, and completing assignments/tests orally or by a scribe)
(Bryan & Becker, 1980; Delks & Nelson, 1985; Jarrow, 1980; Warnath & Dunnington, 1981).

Postsecondary institutions as well as community organizations such as the Canadian National Institute for the Blind (CNIB) work together to provide these services to visually impaired students. Students with total loss of vision usually have their own means of getting around campus, for example, by guide dog, white cane or electronic equipment.

To summarize, postsecondary students with visual disabilities usually require visual information translated to oral and/or tactile means. Various types of equipment and assignment accommodations are commonly provided for these students by university and community organizations.

In conclusion, services that disabled students may have in common are assignment adjustments (i.e., extensions for completion or alternate methods for completing the assignment); specialized counselling; alternate entrance assessments and/or adjustment in admissions criteria; and modification of notetaking methods. In addition, the services that are unique to each group of disabled students are the special technology and the architectural adjustments designed for each type of disability.

In this section, needs and services to meet the integration needs of disabled students have been described. The next step in the literature is to determine whether the available services are perceived to be meeting disabled students' needs. Understanding the students' perceptions of how well these services are meeting their integration needs may have an influence on decisions made regarding the efficacy, change and/or continuation of these services.

Issues

Various issues related to postsecondary students with disabilities have appeared in the literature. The issues described here will relate to the integration of disabled students in university academic and social programs and in the physical campuses. These include: a) Appropriateness of support services, b) Faculty awareness and attitudes; and, c) Nondisabled students' awareness and attitudes.

Appropriateness of support services. Although all American public institutions must comply with the regulations requiring full and equal accessibility of disabled students, there is some disagreement among administrative service providers and disabled student advocates regarding the function and legitimacy of specific services for specific disabilities (Goodin, 1984; Jastram, 1979). The American Rehabilitation Act's general implications are interpreted in different ways by postsecondary institutions, especially regarding what the minimum standards are for meeting the guidelines. Literature related to this issue is usually directed to those who are responsible for developing policies and guidelines for disabled student services, as well as those who provide these services.

The emphasis found in this literature is twofold: 1. Specific services must be available for disabled students, and, 2. Appropriateness of specific services is critical. Advocates of disabled students have written articles listing the range of services disabled students require for successful integration. These advocates claim that, although physical accessibility may have become the norm in most universities and colleges, few institutions have actually established satisfactory procedures for numerous other services (Onwood, Freimuth, Rickert & O'Hear, 1985). In their article describing necessary procedures for disabled students, Onwood et al. stated, "We believe the absence of such procedures may inhibit the opportunities of disabled students" (p. 136).

Publications on services required by disabled students have been useful for institutions trying to implement the (American) Section 504 regulation of the Rehabilitation Act. For example, a few journals have published entire issues that discuss services which disabled students need at university levels (e.g., Journal of Learning Disabilities, Vol. 15, No. 9; New Directions for Student Services, Vols. 10 and 18; New Directions for Higher Education, Vol. 25). The Association on Handicapped Student Service Programs in Post-Secondary Education (AHSSPPE), the clearinghouse called Higher Education and the Handicapped (HEATH), the Association for Children and Adults with Learning Disabilities and Sprandel and Schmidt (1980) have documented numerous publications that educate administrators on how to follow the regulations.

Discussion of the appropriateness of the specific services component of this issue is a more recent development. In the years since the Regulations were passed, most postsecondary institutions have established a service delivery system for disabled students. Attention is now focusing on these services to see if they actually meet disabled students' integration needs or if they are inappropriate to the student(s) served. Onwood et al. (1985) addressed this concern in their article by stating, "Procedures should guard against the weakening of academic standards, yet provide for reasonable modification of programs and courses to meet the needs of disabled individuals" (p. 36).

Goodin (1984) reported that many professors disagree on what services are appropriate for disabled students, particularly LD students. As coordinator of services for handicapped students at Indiana University, he presented a list of 25 academic adjustments for LD students to 15 colleagues, asking them to evaluate each proposed adjustment for their appropriateness. He found that for only six of the 25 adjustments, more than two-thirds of the respondents were in agreement. He quoted Jastram (1979):

> There will probably be no more persistent or difficult problem for faculty members than this question of how far it is reasonable or appropriate to go in waiving specific requirements or modifying significant skill-developing exercises in order to accommodate the limitations of a particular handicapped student. (p. 15)

In a later study, Bumba and Goodin (1986) received completed questionnaires from 255 members (48%) of AHSSPPE who were involved in providing services to LD students at two- and four-year colleges or universities. The respondents were asked to indicate the extent to which they agreed or disagreed that the 27 listed adjustments should be made available to LD students. For 15 of the listed adjustments, 74% or more of the respondents agreed the adjustments should be made. For most of the remaining 12 adjustments, there was usually 50% agreement. Although the agreement appears substantial, it is clear that service providers, who should best know the needs of LD students, are not in full agreement as to what services are unequivocally required by LD students.

Disagreement can involve the exact method of service. For example, Morkert and Funckes (1985) contend that, for hearing impaired students, transliteration (which involves changing the mode from auditory to visual) rather than sign language interpretation, should be the appropriate service for classroom lectures. Humphries (1985) disagreed with Morkert and Funckes, stating that translation or sign language interpretation is just as valid as transliterating. Here the need for a service is agreed on, but the nature of the service is equivocal.

Further discussion and research is anticipated on this issue, as no concensus is in sight. Because disabled students as a group are extremely heterogenous, various perspectives and attitudes are held by student service providers and faculty regarding what their integration needs actually are. It would be advantageous to ask the disabled students themselves what services they require and whether the services they are receiving actually meet their needs.

In summary, there has been agreement that disabled students need services to ensure full and equal program accessibility. However, some advocates of disabled students claim that many institutions are not going far enough to provide all the necessary services. Concurrently, there is debate over which services are appropriate and which services go perhaps too far in meeting disabled students' needs. It would therefore be helpful to find out if the University of Alberta is providing enough services to disabled students and how its disabled students feel about whether the services are appropriately meeting their needs.

Faculty awareness and attitudes. Access and full use of services for disabled students' academic integration are said to be dependent upon the faculty's awareness and attitudes toward disabled students (Jastram, 1979; Nathanson, 1983; Walker, 1980). Since the Rehabilitation Act of 1973 was implemented, some of the literature concerning disabled students at postsecondary levels has focussed on how faculty can ensure program accessibility for disabled students. For example, instructors can provide assignment extensions for students whose disabilities slow them down in completing assignments. In her article describing the types and range of attitudes found among instructors, Walker (1980) concluded, "Enlisting the help and involvement of faculty is probably the element most crucial to program accessibility and services for handicapped students" (p. 62). For disabled students to be able to utilize the available services, positive and constructive acceptance by faculty is considered critical.

Walker also described how early learning and background experiences with disabled students have a major influence on university personnel's attitudes toward disabled students. In his study, Nathanson (1983) found a range of positive and negative attitudes on the part of thirty fellow full-time undergraduate faculty members who had different experiences with disabled students. From his interviews with faculty members, Nathanson concluded:

> Many faculty members around the country are employed on college campuses where there has been little opportunity for interaction with physically disabled students, either because there are few students with physical impairments or because the nature of their teaching, research and advising functions have limited such interaction. As a result of limited exposure, faculty members have typically not sufficient opportunity to observe, first-hand, the capabilities of physically disabled students and are more apt to focus on students' limitations and inabilities, to assume the worst and expect the least... With increased exposure and contact, there is a greater likelihood that faculty members will have an opportunity to develop a positive impression of physically disabled students. (p. 52)

The need for increased awareness of the "hidden disability"--learning disabilities--can be overlooked. Some faculty members and institutions believe that students smart enough to be accepted to univeristy could never have a learning disability (Faigel, 1985; Minner & Prater, 1984).

In their study of the academic expectations college instructors have of LD college students, Minner and Prater (1984) found written comments such as "I am trained to teach bright students, not handicapped ones" (p. 228). Some LD students avoid teachers and institutions who hold these attitudes. Others who experience resistence or nonacceptance fail and/or quit (Faigel, 1985).

Increased positive, informative interactions between faculty staff and students with disabilities have been recommended by many service personnel as a necessary way to get rid of any negative attitudes that faculty may have toward disabled students (Moore, Newlon & Nye, 1986; Stovall & Sedlacek, 1983). Informed and understanding faculty members can then play an effective role in alerting incoming disabled students to needed services (Cutcher, 1981; Jarrow, 1981; Linkowski, 1978; Mehan, 1977; Minner & Prater, 1984; Nathanson, 1983; Perreira, 1983).

Heliotis and Edgar (1980) studied the views of nine students with cerebral palsy and fourteen of their instructors on how much awareness regarding these disabled students they felt was still needed. They found that 67% of the students and 93% of the instructors interviewed expressed the need for increased awareness in their classes. Ninety-three percent of the instructors also wished to learn more about appropriate academic modifications for these students. Although this study dealt with small numbers and with only one disability, the need for greater awareness was agreed on by the majority of faculty and students.

To summarize, awareness and positive attitudes by faculty members toward disabled students play a major role in allowing disabled students to use available services in academic programs. Increased awareness and positive interactions between faculty and disabled students are seen as important factors in ensuring that services are fully accessed.

One way to research faculty members' attitudes and awareness of disabled students' academic needs would be to have disabled students evaluate the academic accommodations they received. Faculty play a large role in affecting the academic integration for disabled students. Because integration is perceived by disabled students, not their teachers or peers (Haring & McCormick, 1986), the disabled students' perspectives regarding how their academic needs are being met are essential.

Nondisabled university students' awareness and attitudes. The ways in which the awareness and attitudes of nondisabled students toward disabled students affect disabled students' integration are similar to the faculty's awareness and attitudes. Within the literature, these two groups are usually given separate attention. This is probably because awareness and attitudes of administration and faculty have a major influence on disabled students' opportunities for academic success, whereas the awareness and attitudes of nondisabled students have a larger impact on disabled students' opportunities for social involvement.

The literature shows that disabled students are still negatively perceived by nondisabled peers. Negative attitudes or stigma is seen as the largest obstacle preventing disabled students from full and equal participation in the college or university setting (Babbitt, Burbach & Iutcovich, 1979; Babbitt & Thompson III, 1981; Fichten & Amsel, 1986; Penn & Dudley, 1980; Tausig, 1981). Tausig (1981) stated, "Perhaps the largest barrier [disabled students] must overcome is the attitude of other people". An example she gave was a PhD student who said, "People often equate physical or sensory handicaps with mental handicaps. Often I go into a restaurant with a friend and the waitress asks my friend what I want to eat" (p. 8).

In a college setting they studied, Babbitt et al. (1979) found evidence of stigma toward disabled students. Their results indicated that nondisabled persons felt others in their immediate surroundings stigmatized disabled students, while they themselves viewed physically disabled students postively. Babbitt et al. concluded that the problem of stigma is related to the issue of equal access to postsecondary institutions. In a later study, Babbitt and Thompson III (1981) examined the perceptions of nonhandicapped college students toward social changes occurring because of legislation and special college programs for disabled students. They found that, on the whole, nondisabled students perceived legislation and special programs as providing positive results, but at very slow rates. Their findings suggested that attitudinal and behavioral barriers may still be preventing disabled students to full and equal accessibility.

In Montreal, Quebec, Fichten and Amsel (1986) explored the feelings and thoughts that able-bodied and physically disabled (i.e, wheelchair users and visually impaired students) college and university students had of each other regarding various aspects of self-concept. They found that the physically disabled students indicated similar self-esteem, social anxiety, dating anxiety and dating behaviour as the able-bodied students, and that the able-bodied students predicted the disabled students to score lower than themselves on these dimensions. The disabled students in the study also predicted other disabled students to score lower on the self-concept dimensions. Fichten and Amsel felt that the stereotyping behaviours of both groups could negatively affect the integration and social interaction of disabled students.

In Penn and Dudley's study (1980), 19 disabled students at one university were surveyed on their opinions of disabled people in general as well as their personal and campus experiences. When asked what they felt was the major obstacle preventing handicapped people from being integrated or participating in "the mainstream of life", 68% indicated "people's values and lack of knowledge" regarding disabled persons. The general concensus of these students was that more effort should be made to improve people's awareness of the difficulties disabled people face as well as the contributions they make for society. Penn and Dudley felt increased awareness would result in society acknowledging disabled persons to be like "normal people".

In a study examining the attitudinal problem with respect to social distance and comfort levels, Stoval and Sedlacek (1983) also concluded that negative attitudes about disabled students continue to exist among college students. They found that the general attitude nondisabled students appeared to hold was, "Disabled people are O.K. with me as long as I don't have to be close to them" (i.e., academically and socially).

All of these studies suggested that attitudes of others contribute to how disabled students perceive their integration within university and college settings. Stoval and Sedlacek (1983) suggested that positive interaction between disabled and nondisabled students, where each can gain from the relationship, is essential to the removal of predjudice and stigmatization of disabled students.

To find out how disabled students view their social integration levels, a comparison of disabled and nondisabled students' views of their social integration would provide an indication of the similarity of the two groups. The results would indicate how successfully integrated the disabled students are on a social level. "Success" would be in terms of how satisfied disabled students are of their social interactions and the level of acceptance they have experienced (Haring & McCormick, 1986).

Disabled Students' Perceptions of their Integration

Penn and Dudley (1980) studied the perceptions of disabled students toward their integration, or full participation in campus life, while attending a "land-grant" university with a student population of 15,500. In their research, 19 disabled students responded to questionnaire items dealing with their social integration, needed services, personal goals, and perceptions of their disabilities. The group consisted of ten students with mobility impairments, three students with visual impairments, three students with hearing impairments, and three students with more than one disability. A descriptive analysis was used with the questionnaire items. The students' responses regarding their social integration and the services they still needed are described in this section.

Perceptions of social integration. A majority of the respondents (73%) in Penn and Dudley's study felt they were moderately active in their social life. Seventy-three percent also indicated they could communicate effectively with and relate well to other people. These two findings taken together indicate that 27%, or nearly one out of every four persons reported that they were less than moderately active and/or could not relate well with other people. Penn and Dudley did not compare these findings with a control group. It would be interesting to know if these students are similar to the campus population as a whole in their social activities and communication skills.

More than half of the students in Penn and Dudley's study felt that campus organizations, student activities and interactions with faculty provided them with positive psychological and social support. These results indicate most of the disabled students had positive views of their social integration, or participation, at their university.

The disabled students were also asked to identify the major obstacles they personally encountered while attending university. Personal or psychological fears and the lack of self-confidence were identified most frequently (73%), and social isolation was identified by a quarter of the students (26%). Although these disabled students' fears and lack of self-confidence could influence their social experiences and overall social integration, Penn and Dudley pointed out that nondisabled students might also be experiencing similar fears and feelings in their interactions and to the same extent as the disabled students. A nondisabled control group was not used in Penn and Dudley's study to support their hypothesis. A comparison study would provide perspective to the disabled students' responses.

Ratings of the services. Penn and Dudley asked the students to identify services they still required. Some of the responses reported were: financial assistance; academic advising; removal of physical barriers; and transportation assistance. Each of these services could influence a disabled student's full participation in campus life in one way or another. For example, financial support can free the student to meet academic goals and have time for social interactions; academic advising can help organize the student's timetable most efficiently; and access around and within buildings can enhance the student's physical and social participation.

Penn and Dudley reported that some of the students felt what was needed was increased sensitivity by nondisabled persons. However, they also reported that "most of the students characterized the campus community's attitude toward their handicap as 'realistically helpful' " (p. 357). Although these findings appear paradoxical, together they reflect how much awareness of disabled students has taken place on their campus. In other words, despite some feelings that insensitivity toward them remained, most of the disabled students saw in others' actions genuine concern and understanding.

Penn and Dudley's study raises the question of how close disabled students' views of their integration match those of nondisabled students' views. Although they suggest the two groups of students have similar goals and feelings, comparisons were not completed. To substantiate their arguement that disabled students are like anyone else, it would appear necessary to add a group of nondisabled students in their study. By comparing both groups' views, the disabled students' perceptions may become better understood.

Questions

From this literature review, it is clear that, for many disabled students, equalized opportunities to pursue postsecondary education are available. Many disabled students are provided services that ensure equal access to physical, academic and social aspects of university life. A number of campuses are barrier free, many accommodations are available for disabled students' academic programs, and participation in campus social activities is possible for a number of disabled students. Although some issues remain, participating in the academic, physical and social components of campus life can be a satisfying experience to disabled students. In other words, given equalized opportunities to university life, many disabled students have the opportunity to interact fully and experience acceptance by nondisabled peers and instructors in academic, social and physical aspects of the university.

The similarities of the disabled students' integration levels to those of nondisabled students has not yet been measured. One way to do this would be to compare the two groups on their perceptions of their academic, social and physical integration. By comparing the groups, the disabled students can be better understood.

This study is an attempt to understand how well disabled students are fitting in to the mainstream of campus life. The questions asked are as follows:

1. How do disabled students view their academic, social and physical integration while attending university?
2. How do disabled students' perceptions of their integration compare to those of nondisabled students?
3. What disabled student services did the disabled students use while attending the University, and how do they rate these services?

III. METHODOLOGY

The main question in this paper relates to how disabled students perceive their academic, social and physical integration, and how these perceptions compare with those of nondisabled students. A secondary question relates to which services were used by disabled students and how well these services are meeting their needs. In the research project, the perceptions of a group of disabled students regarding their academic, social and physical levels of integration were compared to those of a group of nondisabled students. In addition, the disabled students' assessments of the services they used were documented.

A questionnaire dealing with students' academic, social and physical integration was developed. The questionnaire was given to each student in a group of disabled students and in a matched group of nondisabled students. The students responded to the questionnaires in the author's presence, with the exception of two disabled students and one nondisabled student who completed the questionnaire alone. The students' responses were compiled and analyzed statistically. This chapter will describe the study's design, the development of the questionnaire, the subjects who participated in the study, and the procedure by which the study was completed.

Design

A contrast groups, matched sample ex post facto design was utilized for this research project. With this design, a group of disabled students' perceptions of their integration could be compared to those of a matched group of nondisabled students. A questionnaire focusing on a student's academic, social and physical integration was given individually to a group of disabled students and a matched group of nondisabled students.

The independent variable was the type of student (i.e., disabled or nondisabled). The students attended the University of Alberta. The disabled students had a mobility, sensory (hearing or vision), or learning disability. Conversely, the nondisabled students did not have a mobility, sensory or learning disability, and were matched to a disabled student on age, sex, year in university and faculty variables.

The dependent variables were student perceptions, namely: 1. perception of academic integration; 2. perception of social integration; 3. perception of physical integration; 4. comparison of themselves to the other student group; and, 5. perception of the University's student services.

Instrument

This section will describe the development of the questionnaire and its final components.

Development of questionnaire. The questionnaire was designed by the author in the following manner:

1. Background information and issues related to disabled students at postsecondary levels were researched.
2. A table consisting of the independent and dependent variables and questionnaire items was made.
3. Research questions were developed.
4. The questionnaire was formulated.
5. The questionnaire was piloted at the University of Calgary in March, 1984. The purpose of the pilot study was:
    a. to field test the questionnaire for improvements and to incorportate student feedback. The participants critiqued the questionnaire on its length, clarity and appropriateness of items, and on possible overlooked items; and,
    b. to develop an interviewing style. The author practiced approaching students, encouraging them to participate in the study, answering their questions, and gaining confidence to manage the interview.

6. The questionnaire was revised, based on feedback.
7. Critique on the revised questionnaire was received from persons knowledgeable in postsecondary disabled student services who worked at the University of Alberta and the Northern Alberta Institute of Technology, and from professors in the department of Education Psychology at the University of Alberta.
8. The questionnaire was reworked to a final form.

Components of the questionnaire. The questionnaire was divided into nine sections, which ranged from general to more specific information. The section titles were:

A. General Information (11 items);
B. Pre-University Preparation (13 items);
C. Orientation on Campus (7 items);
D. Registration (4 items);
E. Services for Students with Hearing Impairments (11 items), Learning Disabilities (11 items), Mobility Impairments (20 items), and Visual Impairments (19 items);
F. Services for All Students (15 items);
G. Extra Curricular Activities (41 items);
H. Classroom Instructors (16 items); and
I. Integration at this University (20 items).

Only questionnaires for disabled students contained Section E, and each of the four disability groups received a portion of Section E that related specifically to its disability. For example, Section E for students with a visual impairment was titled, "Services for Students with Visual Impairments".

The questionnaire in its final form is shown in Appendix B.

Subjects

The total number of students in the study was eighty-two: forty-one disabled students and a matched group of forty-one nondisabled students. Of the disabled student group, 56% (n=23) had a mobility impairment, 19% (n=8) had a visual impairment, 15% (n=6) had a hearing impairment, and 10% (n=4) had a learning disability. The mobility impaired students had 13 types of impairments, including multiple sclerosis, arthritis, muscular dystrophy, and various forms of paralysis. The visually impaired students had four types of impairment, including tunnel vision and light perception, or the ability to distinguish light. The hearing impaired students had three levels of impairment, from moderately severe loss to profound loss of hearing. All of the learning disabled students' primary disability was in language, being affected from mild to severe levels of learning disability. Table 1 is a summary of the disabilities found in the group of disabled students.

The nondisabled students were matched to the disabled students on the following variables: faculty, sex, age (i.e., 18-19; 20-23; 24-29; 30+ years), and year in university (i.e., 1st; 2nd; 3rd or 4th; 5th+ year groups). Table 2 describes the two groups on the matched variables.

Additional background information was provided by the two groups, but was not used for matching purposes. The following background data of the two groups are summarized in Table 3: Full-time/part-time status; mean number of courses taken; mean grade point average (GPA); socioeconomic status (SES) of parents; location of permanent home; mean number of disabled students known well; and mean number of disabled students known as acquaintances.

Criteria for participation. To participate in the study, the students had to meet the following criteria:

1. The student had to be enrolled at the University of Alberta as a full or part time student.
2. To be qualified as a disabled student, the student's disability had to:
    a. meet its educational definition (see Appendix A); and,
    b. limit the student's ability to function normally in academic, social and/or physical mobility activities

Table 1
Disabled Students' Disabilities, by Type

	Number (%)
a) HEARING IMPAIRED STUDENTS (n=6)	
Degree of Impairment	
1. Moderately severe (56 - 70db)	1 (17)
2. Severe (71 - 90 db)	2 (34)
3. Profound (91+ db)	3 (50)
b) LEARNING DISABLED STUDENTS (n=4)	
Extent of Primary Disability (i.e., Language)	
1. Mild	1 (25)
2. Moderate	1 (25)
3. Severe	2 (50)
c) VISUALLY IMPAIRED STUDENTS (n=8)	
Degree of Impairment	
1. Fields	2 (25)
2. 20/100 - 20/199	2 (25)
3. 20/200+	3 (38)
4. Light Perception	1 (12)
d) MOBILITY IMPAIRED STUDENTS (n=23)	
Type of Impairment	
1. Paraplegia	5 (22)
2. Hemiplegia	2 (9)
3. Qudraplegia	6 (26)
4. Amputee - above knee	1 (4)
5. Bilateral hip dislocation	1 (4)
6. Left leg immobilized	1 (4)
7. All joints affected	1 (4)
8. Rheumatoid arthritis	1 (4)
9. Left hip surgery & broken leg	1 (4)
10. C.P.; Spastic diplegia	1 (4)
11. Total spine & limbs affected	1 (4)
12. M.D.; weakness in muscle groups	1 (4)
13. M.S.; weakness in legs & hands	1 (4)

Note. C.P.= Cerebral Palsy; M.D.= Muscular Dystrophy; M.S.= Multiple Sclerosis.

Table 2
Matching Data for the Two Groups

Faculty	n	(%)	Yr. in University	n	(%)	Age	n	(%)	Sex	n	(%)
Education	32	(39)	1	8	(10)	18-19	8	(10)	F	36	(44)
Arts	16	(19)	2	15	(18)	20-23	30	(37)	M	46	(56)
Science	12	(14)	3-4	29	(35)	24-29	20	(24)			
Business	8	(10)	5+	30	(36)	30+	24	(30)			
Home Econ.	6	(7)									
Law	5	(5)									
Pharmacy	2	(2)									
Phys. Ed & Recreation	2	(2)									

Table 3
Nonmatching Data of Disabled and Nondisabled Students

Items	Disabled Students n (%)	Nondisabled Students n (%)
1. Number of courses		
less than 3	9 (22)	4 (10)
3 to 4	18 (44)	13 (32)
5 or more	14 (34)	24 (59)
mean:	*3.78*	*4.34*
2. Student Status		
full-time	33 (81)	41 (100)
part-time	8 (20)	0 (0)
3. Current G.P.A.		
0 - 3.9	1 (2)	0 (0)
4.0 - 5.9	6 (15)	5 (12)
6.0 - 7.9	28 (68)	26 (63)
8.0 - 9.0	5 (12)	9 (22)
no response	1 (2)	1 (2)
4. Parents' SES		
lower/lower mid	3 (7)	8 (20)
middle	20 (49)	23 (56)
upper-mid/upper	17 (41)	10 (24)
no response	1 (2)	0 (0)
5. Permanent Home		
rural	3 (7)	10 (24)
small town	3 (7)	4 (10)
suburban	5 (12)	9 (22)
urban	30 (73)	18 (44)
6. Number of Disabled Students - know well		
0	9 (22)	14 (34)
1 - 3	10 (24)	22 (54)
4 - 10	13 (32)	4 (10)
11 - 30	5 (12)	0 (0)
31+	4 (10)	1 (2)
7. Number of Disabled Students - know somewhat		
0	7 (17)	7 (17)
1 - 3	9 (22)	23 (56)
4 - 10	5 (12)	9 (22)
11 - 30	6 (14)	2 (5)
31+	14 (34)	0 (0)

while enrolled at the University. While this criterion is subjective, it proved workable when deciding on a few borderline cases. For example, one student who was not included in this study had some operations on his foot during the school year, affecting his academic progress temporarily. However, he was able to function normally in academic, social and physical functions (e.g., he was an avid skier), following recuperation. On the other hand, another student included in this study experienced a long term disability with her back. Although her disability did not force her to use a wheelchair, she could not participate in many of her drama and physical education classes, and, while studying, could not sit for long periods at a time.

3. Each nondisabled student had to be matched to a disabled student on the matching variables.

Although the registry of disabled students at the University listed 63 students as having a disability, 30 of these 63 participated. Of the 33 students who did not participate, twenty-three did not qualify for the study, two students were no longer in school, six students could not be reached, one could not be matched, and one refused to participate. Eleven disabled students who were not listed on the registry of disabled students were found by various means (e.g., soliciting in classes, contacting students in cafeterias, etc.), bringing the total number of disabled students in the study to 41.

Procedure

This section will include the method in which the students were contacted for the study, and the procedure in which data were collected.

Method of contacting students. To locate disabled students for the study, the following methods were used:

1. Registry of disabled students. The Office of Student Services provided a listing of disabled students. Most of

the 30 participating students (73%) were contacted by phone. Individual appointments were set up for each student to fill in the questionnaire. The questionnaires were then completed in the author's office or a location more convenient to the student.

2. Advertisement. An ad was placed in two issues of the University of Alberta's major student newspaper (i.e., The Gateway). The ad requested that students with a disability volunteer for the study. Three disabled students (7%) responded to the advertisements.

3. Incidental meeting. Any student the author met or observed on campus as having a disability was asked to participate in the study. It was felt that, because a disability may be fairly visible, requesting students' participation in this way might gain access to students who may not otherwise be contacted. This method was used throughout the study's duration. Four students (10% of the disabled student group) participated as a result of this process. Of the several methods used to locate disabled students, this was the only method that accessed students with a visible disability.

4. Referral. Four disabled students (10%) were referred by persons who were aware of the study. These persons included a professor at the University, an acquaintance of the author, and a nondisabled student participating in the study.

Nondisabled students, matched on the disabled students' faculty, sex, age and year in university, were located for the study in the following ways:

1. During the first two weeks of the project, students on the campus were approached individually and were asked to volunteer for the study. The completed questionnaires from matching qualified students were kept, and those from nonmatching students were discarded. As many of these students did not qualify, this process became quite time consuming.

2. During the third week, the process of locating matching

nondisabled students was accelerated. Nondisabled students who agreed to volunteer for the study were first asked to provide verbally the information on which they were matched. If the student could not be matched, he or she was immediately excused from the study. Only matching nondisabled students thereafter completed the questionnaire.
3. As the number of unmatched disabled students became fewer, acquiring nondisabled volunteers became more difficult. During the last week of the study, three professors from the Education Psychology department agreed to request volunteers from their classes. As well, five professors from other departments permitted the author a few minutes at the end of their classes to request volunteers for the study. With this method, all but one of the disabled students were matched by December 6, 1984. The unmatched disabled student's questionnaire was discarded from the study.

Procedure of data collection. The questionnaires were completed by the participating students between October 12 and December 6, 1984. By this time, first year students had some indication of their GPA (one of the background information items). It was also hoped that, by this time, first year and transfer students would have had enough time to make use of services the University provided, and to develop perceptions of their levels of integration.

The scheduling procedure and the locations in which the questionnaires were filled out varied for the two groups. As mentioned earlier, the disabled students were contacted ahead of time, and appointments and meeting places were usually arranged by telephone. The author's office or a pre-arranged quiet area were used to complete the questionnaire. On the other hand, the nondisabled students normally did not require scheduling of time or location. They completed the questionnaire at the time and place they were asked to volunteer for the study (i.e., after or between classes and in a hallway or empty classroom).

The author assisted students in completing the questionnaire by answering questions or filling in the questionnaire (e.g., for visually impaired students) when necessary. All but three of the 82 students completed the questionnaire in the author's presence. The others completed the questionnaire alone, and had the opportunity to contact the author for any questions or clarifications they needed.

No time restrictions were placed on the students when completing the questionnaire, and the students were not timed. The disabled students generally took longer in completing their questionnaires, since they were required to complete one section more than the nondisabled students (i.e., Section E) and some were slowed down due to their disability. All students completed the questionnaire in one sitting.

All student responses were kept confidential.

IV. RESULTS

Once the questionnaire data were gathered, a series of statistical analyses were performed. Statistical analyses were administered to specific questions to determine how disabled students and nondisabled students viewed their academic, social and physical levels of integration in the University, and how the disabled students rated the special services they used while attending the University. This chapter presents the results of these analyses.

The chapter begins with a general description of results. A series of descriptive statistics were calculated for the frequency of services used by the two groups, the disabled students' ratings of the services they received, and the two groups' perceptions on how they learned the campus layout and moved about on the campus. Next, the central question of this thesis, how disabled students viewed their integration levels, was assessed using Hotelling T^2 tests. Finally, in post-hoc analyses, Pearson Correlation Coefficients were obtained and T^2 tests were completed to further explore relationships between variables and group differences related to the central thesis questions.

Descriptive Statistics

In the questionnaire, all participants were asked to rate the university preparation services they used before entering university, as well as services used or not used while on campus. In addition to rating services provided for all students, the disabled students rated services which catered to their specific needs. For example, mobility impaired students rated equipment such as modified worktables and tape recorders and the on-campus vehicle service.

In this section, the two groups' frequency of services used at the University are compared. The frequencies were taken from the students' ratings of the services, as any rating was considered a frequency. Because of the large number of nonusers in each group, descriptive statistics appeared more appropriate than analytic statistics. In addition, the disabled students' ratings of the special services they recieved while at the University are included in this section. These results address which services the disabled students used, and how well these services met their needs.

Frequency of services. The services used by both groups of students are divided into six categories in the questionnaire. These are: 1. information received prior to admission; 2. information upon admission; 3. orientation services; 4. registration services; 5. library services; and 6. general student services.

Information students received prior to university entrance was used slightly more often by the nondisabled student group than the disabled student group. However, as Table 4 indicates, the main difference between the two groups is the nondisabled students' more frequent use of a university friend. Forty-six percent of the disabled students compared with 75% of the nondisabled students used a university friend to provide information. Generally, the information services were used by 20 to 46% of both groups.

The smallest number of service users were for services which required considerable student initiative. For example, 46% of the disabled students and 37% of the nondisabled students used their highschool adviser; and pre-admissions interviews were used by 27% of the disabled students and 32% of the nondisabled students. The largest number of users were of written or mailed information. For example, 95% of the disabled and nondisabled students used the university calendar, timetables and registration information.

The frequency of information services used upon admission by the two groups is almost identical, as shown in Table 4. As well, the similarity between the two groups in their use of registration services is demonstrated in Table 5. About

Table 4
Sources of Information Assisting Disabled and Nondisabled Students Prior to and During University Admissions

	Number of Responses[a]	
Variable	Disabled Students n (%)	Nondisabled Students n (%)
(a) Prior to Admission		
High school advisor	19 (46)	15 (37)
High school teacher	18 (44)	27 (67)
Provincial Career Centre	11 (27)	8 (19)
Mailed information	25 (61)	27 (67)
University friend	19 (46)	30 (74)
Pre-admissions interview	11 (27)	13 (32)
Open House/visit	15 (37)	10 (24)
(b) During Admission		
Mailed information	35✓ (85)	37 (90)
Academic advisor(s)	25 (62)	24 (59)
Faculty information	28 (68)	30 (73)
Calendar, timetables, registration information	39 (95)	39 (95)

[a] More than one response permitted.

half of both groups used the pre-registration orientation; both groups used personnel and friends or students' help more frequently.

Orientation services and resources tended to be used more by the disabled students than nondisabled students, as shown in Table 6. However, only the orientation to the campus had large differences between groups. Eighteen (44%) disabled students compared to nine (22%) nondisabled students used the Student Services' orientation to the campus program. The groups had greater similarities in their use of friends to help orient them to the campus; maps, guides and university handbook; and help from passerbys.

During the school year, more nondisabled students used the library services than disabled students, while more disabled students used the University's student services. However, the differences were generally not large, as presented in Table 7. The main difference between the groups was in their use of maps and information regarding the campus and community. Nine to 11 more disabled students than nondisabled students used these resources. In general, the disabled students made more use of written information, while more nondisabled students used information from personnel.

To learn how the disabled students physically adapted to the University campus, the two groups were asked how difficult it was for them, during the first few weeks of classes, to a) learn the physical layout of the campus, and b) to get from one place to another on campus. By adding responses 3 and 4 of Variable 1 in Table 8, 31 (75%) of the disabled students versus 24 (59%) of the nondisabled students indicated having less difficulty in learning the layout. However, responses 3 and 4 of Variable 2 indicate that 32 (79%) disabled students versus 36 (99%) nondisabled students had more difficulty in getting from place to place on campus. The differences between the groups are slight, and appear quite similar.

Table 5
Means by which Disabled and Nondisabled Students were Helped in their Registration

Variable	Frequency[a] Disabled Students n (%)	Frequency[a] Nondisabled Students n (%)
Pre-registration (academic) orientation	20 (48)	23 (56)
Friend/student's help	27 (67)	31 (76)
Registration personnel	32 (78)	35 (85)

[a] More than one response permitted.

Table 6
Means by which Disabled and Nondisabled Students were Oriented to the Campus

Variable	Frequency[a] Disabled Students n (%)	Frequency[a] Nondisabled Students n (%)
Orientation to campus	18 (44)	9 (22)
Friend's help	26 (63)	28 (68)
Map(s)/guide(s)/handbook	39 (95)	34 (83)
Passerby	26 (63)	22 (54)

[a] More than one response permitted.

Table 7
Means by which Disabled and Nondisabled Students were Assisted in their Academic Needs

Variable	Frequency[a] Disabled Students n (%)	Nondisabled Students n (%)
a) Library Services		
Study carrels	28 (68)	31 (77)
Librarian/staff	33 (81)	37 (92)
Periodicals	30 (73)	35 (87)
ERIC/computer search	21 (51)	20 (49)
Microfiche/card catalogue	34 (83)	38 (94)
Library workshop orientation	20 (49)	20 (49)
b) Student Services		
Maps	35 (85)	26 (64)
Information on campus & community orientation	25 (61)	14 (24)
Counselling: vocational	12 (29)	9 (22)
Counselling: personal	8 (22)	11 (27)
Remedial course (academic)	4 (10)	9 (22)
Remedial course (written language)	8 (20)	7 (17)
Tutor	6 (15)	2 (5)

[a] More than one response permitted.

Table 8
Disabled and Nondisabled Students' Perceptions of their Physical Adaptation Skills to University Campus

		Number of Responses			
		Disabled Students		Nondisabled Students	
Variable	Response Option	n	(%)	n	(%)
1. Learning the physical layout of the campus	1	2	(5)	3	(7)
	2	8	(20)	14	(34)
	3	12	(29)	6	(15)
	4	19	(46)	18	(44)
	Totals:	41	(100)	41	(100)
2. Getting from one place to another	1	1	(2)	2	(5)
	2	8	(20)	3	(7)
	3	15	(37)	18	(44)
	4	17	(42)	18	(55)
	Totals:	41	(100)	41	(100)

Note. Response Options: 1 = Much difficulty, 2 = Somewhat difficult, 3 = A little difficult, and 4 = Not at all difficult.

Disabled student services. In the questionnaire, the disabled students were asked to rate the disabled student services they used while at the University. All the services were available to every student through at least one university source (i.e., the Disabled Student Services office, faculty, or the University's administration). They were also asked to indicate from which sources they accessed their services.

Listed in Table 9 are the services available to the four groups of disabled students and the ratings of these services given by the disabled students who used the services. Of 36 available services, 73% (n=26) of the services were used by up to 25% of each group of disabled students. The one service used by two hearing impaired students was an interpreter, and was given an excellent rating.

The four learning disabled students also used few services. Three of the four services were used by one student, and one service (i.e., typewriter) was used by two students. All of the services used were given good to excellent ratings.

Three services which were available to the mobility impaired students (n=22) were used by more than 80% of the group. Ramps were used by 18 students (82%), elevators were used by 21 students (96%), and occasional mobility assistance was used by 18 (82%) students. The remaining seven services for mobility impaired students were used by one to six students. The students gave good to excellent ratings for six of the ten services; the remaining four services were given fair to excellent ratings.

Sixteen services were available to the visually impaired students (n=8). Thirteen of these services were used by less than a quarter of the students. Of the twelve services that were used, nine were given excellent ratings and three were given fair to excellent ratings.

The disabled students were also given two opportunities

Table 9
Ratings of Services used by the Disabled Students

	Responses^{a}				
Service	1	2	3	4	Number of Users (%)
All Disabled Students (n=41)					
1. Priority registration	12	2	3	0	17 (43)
2. Notetaker	8	3	1	0	12 (12)
3. Specialized counselling	9	4	0	2	15 (37)
Hearing Impaired Students (n=6)					
1. Interpreter	2	0	0	0	2 (33)
2. Exam interpreter	0	0	0	0	0 (0)
3. FM System	0	0	0	0	0 (0)
Learning Disabled Students (n=4)					
1. Oral exam reader	1	0	0	0	1 (25)
2. Cassette recorder	0	1	0	0	1 (25)
3. Typewriter	2	0	0	0	2 (50)
4. Micro processor	1	0	0	0	1 (25)
Mobility Impaired Students (n=22)					
1. Exam writer	4	0	0	0	4 (18)
2. Cassette recorder	0	1	1	0	1 (9)
3. Typewriter	3	1	0	0	2 (9)
4. Worktable	1	2	0	0	3 (14)
5. Ramps	14	2	2	0	18 (82)
6. Elevators	17	3	1	0	21 (96)
7. Vehicle between buildings	5	1	0	0	6 (27)
8. Mobility assistance-regular	6	7	1	0	14 (64)
9. Mobility assistance-occas'l	4	0	0	0	18 (82)
10. Fire wardens	0	2	0	0	1 (9)
Visually Impaired Students (n=8)					
1. Exam writer	1	0	0	0	1 (13)
2. Typewriter	2	1	1	0	4 (50)
3. Electronic visual aid	1	0	0	0	1 (13)
4. Electronic calculator	0	0	0	0	0 (0)
5. Talking computer terminal	0	0	0	0	0 (0)
6. Brailler	0	0	0	0	0 (0)
7. Tactile map	0	0	1	0	1 (13)
8. Reader	1	1	0	0	2 (25)
9. Enlarged print	2	0	0	0	2 (25)
10. Braille material	0	0	0	0	0 (0)
11. Other:					
a. Extended time for exams	1				1 (13)
b. Monscula	1				1 (13)
c. Dictaphone	1				1 (13)
d. Enlargening	1				1 (13)

[a] Response 1 = Extremely useful to 4 = Detrimental, made things worse.

to indicate services they needed but were not available to them. In the first instance, when rating the university's disabled student services, the students could indicate that they needed a service but it was unavailable to them. In the second instance, the students were asked if they required additional services, and, if so, to identify them. From both of these questions it was found that 14 (32%) of the disabled students required services that were not yet available to them or which they had not yet located. Listed in Table 10 are the services that students with visual impairments, mobility impairments and learning disabilities indicated they required. None of the hearing impaired students indicated a need for additional services. The table also indicates which services had been available, but had not been located by these students.

Services used by disabled students within and outside the university were explored. University and community support systems were used by 34 (85%) of the disabled students. Of these 34 students, 27 students (79%) used services from the University's Disabled Student Services office, 21 (62%) used their faculty, and 18 (53%) used various community organizations (e.g., CNIB, Alberta Social Services) and contacts (e.g., relatives and friends).

Hotelling T^2 Tests

In the questionnaire, a number of questions asked the students to provide information about their social and academic integration. They were asked how frequently they participated in various university and nonuniversity activities; how much time they needed for the academic and nonacademic activities; and their opinion of how well adjusted they were in various academic and social situations of their university life. Hotelling T^2 tests were used to test for significant differences between the two groups' means for each area. This section will describe the results

Table 10
Services Needed by Disabled Student Group

Service[a]	Number (n = 41)	Disability
1. Priority registration*	3	Mobility, Visual, LD
2. Specialized counselling*	2	Mobility
3. Mobility assistance*	2	Mobility
4. Tactile maps	1	Visual
5. Enlarged print*	1	Visual
6. Full spectrum lighting**	1	Visual
7. Larger microfiche print	1	Visual
8. Tutoring*	2	Visual, LD
9. Computer/Micro processor*	2	Mobility, LD
10. Extended time for assignments	1	LD
11. Volunteer readers*	1	Visual
12. Storage space for equipment	1	Visual
13. Snow removal**	1	Mobility
14. Nursing assistance (occasional)	1	Mobility
15. Bookstore assistance	1	Mobility
16. Computer lecture link	1	Mobility
TOTAL:	22	

[a] More than one response permitted.
*Available by the University's Disabled Student Services.
**Responsibility of the University's Physical Plant.

of the Hotelling T^2 tests for each area.

The various university and nonuniversity activities were divided into four types of activities. These activities dealt with the frequencies of the students' participation in various university and non-university activities, including: 1. formal university; 2. informal university; 3. formal nonuniversity; and 4. informal nonuniversity. Each type of activity was made up of six to nine activities. The students were asked to indicate whether they were nonattenders, occasional attenders, or regular attenders of each activity (0, 1, or 2, respectively). As seen in Table 11, no significant differences were found between the two groups in all four types of activities.

For the second area, the students were asked to indicate how much time they preferred to spend in various academic, social and physical activities. To answer, they used a Likert scale of 1 to 5 (1 = More time preferred; 5 = Less time preferred). As shown in Table 12, these two groups had preferences that were not significantly different.

For the third area, the students were asked to indicate how they rated their adjustment levels for academic and social situations while at university. A Likert scale was again used, and six social and academic situations were given. The six situations were presented three times, with a different question posed each time. The questions were:

1. How do you rate yourself in the following situations? (1 = Very well; 5 = Much difficulty)
2. How do you compare yourself [in the following situations] with students who have a disability? (1 = Much better; 5 = Much worse)
3. How do you compare yourself [in the following situations] with students who do not have a disability? (1 = Much better; 5 = Much worse)

Hotelling T^2 tests were administered to the data for the three questions. The responses of the two groups are presented in Table 13. There were no significant

Table 11
Hotelling T^2 Tests on Frequencies of Disabled and Nondisabled Students' Participation in University and Nonuniversity Activities

	University		Nonuniversity	
	Formal	Informal	Formal	Informal
T (2 Tail)	9.82	8.38	11.15	4.24
F-Ratio	.98	1.31	1.74	.66
Probability	.46	.26	.12	.68

Table 12
Hotelling T^2 Tests on Disabled and Nondisabled Students' Time Preferences in Various Academic and Social Activities

T (2 Tail)	16.96
F-Ratio	1.51
Probability	.16

Table 13
Hotelling T^2 Tests on Disabled and Nondisabled Students' Perceptions of Adjustment

	T(2 Tail)	F-Ratio	Probability
Own Adjustment	6.74	1.03	.42
Adjustment Compared to Disabled Students	11.78	1.84	.10
Adjustment Compared to Nondis'd Students	10.64	1.66	.14

differences between the means of the two groups for all three tests.

Post Hoc Analyses

The Hotelling T^2 tests did not reveal any significant differences between the two groups of students. This finding is important for understanding how disabled students perceived their academic, social and physical integration. To further understand the integration questions, post hoc analyses were performed. Pearson Correlation Coefficients were obtained and T-tests were used in the post-hoc analyses of the questionnaire items dealing with the students' perceptions of their own integration. This section will describe the results of these tests.

Pearson Correlation Coefficients. Relationships were examined between variables in the questionnaire that dealt with the disabled students' views of their integration. The variables which were correlated, and the results of these correlations were:

a) The students' grade point averages (GPA), age, and year in university were correlated with their perceptions of their own academic and social adjustment levels. As seen in Table 14, little or no relationship existed between GPA, age, or year in university and any of the social or academic perception variables. In other words, a student's GPA, age or year in university were poor indicators of how the student perceived his/her social or academic integration levels. However, correlations were found to be significant between GPA and year in university ($p < .003$), GPA and age ($p < .001$), and age and year in university ($p < .001$) for both groups of students. Significant correlations were also found for both groups of students between their opinions of their ability to converse with university peers in social situations and their opinions of their ability to interact in class ($p < .001$), their ability to converse with classmates ($p < .001$), and their ability to assert

Table 14
Correlation Coefficients of GPA, Age, and Year in University and Disabled and Nondisabled Students' Perceptions of Own Academic and Social Adjustment Levels

Variable	1	2	3	4	5	6	7	8
1. GPA		.42**	.34*	-.22	-.12	-.07	.00	-.20
2. Age			.46**	-.10	-.10	-.15	-.15	-.15
3. Year				.04	-.10	-.02	.03	-.20
4. Study					.20	.15	.20	.34*
5. Class						.38	.40**	.31*
6. Converse							.45**	.27
7. Peers								.38**
8. Assert								

Note. GPA = Grade point average, Year = Year in university, Study = Study skills and habits, Class = Ability to interact in class, Converse = Ability to make conversation with classmates, Peers = Ability to interact with university peers in social situations, and Assert = Ability to assert self to get academic needs met.

* p <.005
** p <.001

themselves in getting their academic needs met ($p < .001$).

b) The students' opinions of their own adjustment in academic and social situations in university were correlated with their comparisons of themselves to nondisabled students on the same situations. For both disabled and nondisabled students, their comparisons of themselves with nondisabled students in their ability to make conversation with classmates correlated at the .005 or .001 level of probability with most of the academic and social situations. Table 15 is a summary of the correlations for both groups in this test.

c) Both groups of students' comparisons of themselves to disabled students in academic and social situations were correlated with their comparisons of themselves to nondisabled students for the same academic and social situations. For the disabled students, one's ability to interact in class and to make conversation with classmates were the best predictors of all the perception-of-adjustment variables. In other words, as the disabled students perceived themselves as more able to interact in class and to make conversation in class than other disabled students, they also tended to view themselves as more able in the following areas: interaction with others in social activities and in class, study skills and habits, general adjustment, and ability to assert oneself to get academic needs met. In Table 16, the correlations and probability ratios of this test are summarized for the disabled students.

In Table 17, the results of the same correlation test on the nondisabled students' responses are shown. Weaker correlations were found in this test. However, one's perceived ability to interact in class compared to other nondisabled students was the best predictor of all the other comparisons made to other nondisabled students.

T-tests. The T-tests involved questionnaire items which

Table 15
Correlation Coefficients of Disabled Students' Perceptions of Adjustment and Their Comparisons of Their Adjustment to that of Other Disabled Students

Variable	1	2	3	4	5	6	7	8	9	10	11	12
OWN ADJUSTMENT												
1. Time		.41*	.08	.12	.10	.34	.33	.02	.04	.03	.12	.07**
2. Study			.19	.09	.11	.20	.05	.51**	.05	.15	.10	.27
3. Class				.44*	.27	.21	.06	.33	.71**	.64**	.28	.47*
4. Converse					.40*	.24	.51**	.26	.51**	.58**	.56**	.34
5. Peers						.38	.17	.20	.42*	.46*	.45*	.50**
6. Assert							.13	.17	.29	.14	.50**	.31
COMPARING SELF TO OTHER DISABLED STUDENTS												
7. Time								.22	.27	.52**	.46*	.30
8. Study									.42*	.47*	.23	.51**
9. Class										.74**	.50**	.68**
10. Converse											.45*	.60*
11. Peers												.37
12. Assert												

Note. Time = Amount of time to get use to university life, Study = Study skills and habits, Class = Ability to interact in class, Converse = Ability to make conversation with classmates, Peers = Ability to interact with university peers in social situations, and Assert = Ability to assert self to get academic needs met.

* p <.005
** p <.001

Table 16
Correlation Coefficients of Disabled Students' Comparisons of Themselves with Disabled and Nondisabled Students

Variable	1	2	3	4	5	6	7	8	9	10	11	12
COMPARING SELF WITH DISABLED STUDENTS												
1. Time		.22	.27	.52**	.46*	.30	.56**	.29	.17	.39	.36	.23
2. Study			.42*	.47*	.23	.51**	.26	.55**	.33	.29	.19	.35
3. Class				.74**	.50**	.68**	.24	.28	.87**	.64**	.59**	.62**
4. Converse					.45*	.60**	.40	.32	.57**	.74**	.54	.42*
5. Peers						.37	.08	.15	.42*	.39	.58**	.27
6. Assert							.35	.37	.56**	.41*	.36	.74**
COMPARING SELF WITH NONDISABLED STUDENTS												
7. Time								.61**	.25	.50**	.41*	.39
8. Study									.22	.28	.24	.31
9. Class										.63**	.59**	.58**
10. Converse											.65**	.40
11. Peers												.46*
12. Assert												

Note. Time = Amount of time to get use to university life, Study = Study skills and habits, Class = Ability to interact in class, Converse = Ability to make conversation with classmates, Peers = Ability to interact with university peers in social situations, and Assert = Ability to assert self to get academic needs met.

* p <.005
** p <.001

Table 17
Correlation Coefficients of Nondisabled Students' Comparisons of Themselves with Disabled and Nondisabled Students

Variable	1	2	3	4	5	6	7	8	9	10	11	12
COMPARING SELF WITH DISABLED STUDENTS												
1. Time		.22	.44*	.53**	.57**	.15	.30	.08	.18	.14	.19	-.01
2. Study			.63**	.27	.14	.46*	.04	.18	.20	.25	.01	.25
3. Class				.64**	.36	.63**	.02	.20	.34	.26	.11	.37
4. Converse					.67**	.33	.03	.13	.24	.05	.08	.14
5. Peers						.15	.17	.11	.31	.10	.29	-.03
6. Assert							-.10	.29	.40	-.08	-.10	.51**
COMPARING SELF WITH NONDISABLED STUDENTS												
7. Time								.51**	.43*	.33	.47*	.35
8. Study									.55**	.20	.21	.66**
9. Class										.45*	.47*	.68**
10. Converse											.65**	.37
11. Peers												.37
12. Assert												

Note. Time = Amount of time to get use to university life, Study = Study skills and habits, Class = Ability to interact in class, Converse = Ability to make conversation with classmates, Peers = Ability to interact with university peers in social situations, and Assert = Ability to assert self to get academic needs met.

* $p < .005$
** $p < .001$

dealt with the students' ratings of their adjustment levels for academic and social situations. (These items were also used in the Hotelling analysis.)

For all T^2 tests, the two groups' perceptions of their own adjustment levels were compared. As presented in Table 18, the two groups were not significantly different in their perceptions, with the exception of one social variable (i.e., interaction with university peers: $T = 2.48$, $p = .015$). In other words, the two groups had similar opinions of their own integration levels.

Another series of T-tests were completed between both groups' comparisons of themselves to disabled students and nondisabled students. The T-test results were a measure of the degree of similarity perceived to exist between disabled and nondisabled students. It was found that the total group perceived the two groups as different, with disabled students doing more poorly than nondisabled students in areas related to academic and social integration. This trend was significant for all six variables ($\text{Variables}_{1,3,4,5,6}$ $P=.000$, Variable $P_2=.001$). Table 19 is a summary of the data of this test.

A T-test analysis was also completed between the two groups' comparisons of themselves to disabled students. Both groups indicated similar perceptions in their comparisons to disabled students. However, as Table 20 shows, in one social situation the two groups were significantly different in their comparison (i.e., interacting with university peers, $T= 2.66$, $P=.009$).

A T-test analysis on the two groups' comparisons of themselves to nondisabled students revealed a trend similar to their comparison to disabled students. Both groups compared themselves to nondisabled students in similar ways. The same exception is made with the variable on interacting with university peers ($T = 2.27$, $P = .026$). These results are found in Table 21.

Table 18

Means, Standard Deviations and T-Values for Disabled and Nondisabled Students' Perceptions of Own Social and Academic Integration.

Variable	Disabled Mean	Disabled S.D.	Nondisabled Mean	Nondisabled S.D.	T Value	DF
Academic Integration						
1. Study skills and habits	2.90	1.14	2.66	1.24	0.93*	80
2. Interaction in class	2.73	1.27	2.59	1.48	0.48*	80
3. Ability to assert self to get academic needs met	2.24	1.11	2.20	1.12	0.20*	80
Social Integration						
4. Ability to make conversation with classmates	2.20	1.20	2.10	0.94	0.41*	80
5. Interaction with university peers in social situations	3.10	1.30	2.40	1.28	2.48**	80

Note. The rating was scored as follows: 1 = Much better *to* 5 = Much worse.
*p >.05
**p =.02

Table 19
Means, Standard Deviations and T-Values for Disabled and Nondisabled Students' Perceptions of Their Social and Academic Adjustment Compared to Others

Variable	Compared with Disabled Students n=81		Compared with Nondisabled Students n=82		T*	DF
	Mean	S.D.	Mean	S.D.	Value	
Academic Variable						
1. Study skills and habits	2.72	0.86	2.98	0.88	2.34	80
2. Interaction in class	2.63	1.02	2.96	1.11	3.41	79
3. Ability to assert self to get academic needs met	2.56	1.00	2.83	1.00	2.75	79
Social Variable						
4. Ability to make conversation with classmates	2.36	0.99	2.69	1.02	2.83	80
5. Interaction with university peers in social situations	2.26	1.08	3.07	1.15	6.49	80
Academic/Social Variable						
6. Amount of time to get use to university life	1.93	0.80	2.84	0.98	8.64	80

Note. The rating was scored as follows: 1 = Much better *to* 5 = Much worse.
*All T values were less than or equal to .001.

Table 20
Means, Standard Deviations and T-Values for Disabled and Nondisabled Students' Comparisons of Themselves with Disabled Students

Variable	Disabled Students Mean	Disabled Students S.D.	Nondisabled Students Mean	Nondisabled Students S.D.	T Value
Academic Integration					
1. Study skills and habits	2.8	1.2	2.8	.9	0.0
2. Interaction in class	2.8	1.5	2.7	1.2	0.4
3. Ability to assert self to get academic needs met	2.7	1.4	2.7	1.2	0.3
Social Integration					
4. Ability to make conversation with classmates	2.5	1.4	2.4	.9	0.3
5. Interaction with university peers in social situations	2.7	1.4	2.0	1.0	2.7*
Academic/Social Integration					
6. Amount of time to get use to university life	2.1	1.2	1.9	.8	0.8

Note. The rating was scored as follows: 1 = Much better *to* 5 = Much worse.
*$p \leq .01$

Table 21
Means, Standard Deviations and T-Values for Disabled and Nondisabled Students' Comparisons of Themselves with Nondisabled Students

Variable	Disabled Students Mean	Disabled Students S.D.	Nondisabled Students Mean	Nondisabled Students S.D.	T Value
Academic Integration					
1. Study skills and habits	3.8	0.9	2.8	0.8	1.9
2. Interaction in class	3.1	1.1	2.8	1.1	1.3
3. Ability to assert self to get academic needs met	2.9	1.1	2.7	1.0	1.0
Social Integration					
4. Ability to make conversation with classmates	2.8	1.1	2.5	0.9	1.4
5. Interaction with university peers in social situations	3.4	1.2	2.8	1.0	2.3*
Academic/Social Integration					
6. Amount of time to get use to university life	2.9	1.1	2.8	0.8	0.3

Note. The rating was scored as follows: 1 = Much better *to* 5 = Much worse.
*$p \leq .05$

V. DISCUSSION

The purpose of this study was to examine disabled students' perceptions of their academic, social, and physical integration. With a questionnaire, a group of disabled students' perceptions were examined by comparing them to those of a matched group of nondisabled students at the University of Alberta. To examine the disabled students' perceptions, the following information was gathered from both groups:

1. The students' opinions of how well they were integrated academically, socially and physically;
2. The students' reports of their level of involvement in the University's academic, social and physical services and activities;
3. The students' reports of their academic level of achievement; and,
4. The students' comparisons of their integration levels to those of nondisabled and disabled students.

In addition, the disabled students indicated which disabled student services they used while attending the University and also rated the disabled student services they used.

One quarter of the disabled student participants were not registered at the University as students with disabilities. The methods used to locate them were not exhaustive. It is clear from the literature that more disabled students are entering postsecondary campuses (Kirchner & Simon, 1984) and that, for various reasons, many of these students are not known to the university (Bohan & Humes, 1986; Sprandel, 1980, 1982). It would be interesting to know how many disabled students are attending the University of Alberta, and to compare this number with Canadian and American averages.

It was found that the perceptions of 41 disabled students and 41 nondisabled students were not significantly different with respect to how they perceived themselves to be integrated at academic, social or physical levels. The groups were also similar in their level of involvement in the University's services and activities, and in their academic level of achievement. There were also no significant differences between the groups in the comparison of the integration levels of nondisabled students with disabled students.

Many of the disabled student services were being used by the disabled students. A majority of these services were given good to excellent ratings.

In a post-hoc analysis, trends were found in the two groups' comparisons of themselves to nondisabled and disabled students. As well, some correlations were found between questionnaire items dealing with the students' perceptions of their academic adjustment at university.

This chapter will discuss the results and provide implications for the integration of disabled students. Areas of discussion will be: a) Perceptions of Integration; b) Involvement in Services and Activities; and c) Cross-group Perceptions.

Perceptions of Integration

Perceptions of academic integration. The Hotelling T^2 tests on the two groups' perceptions of their academic integration levels show disabled students and nondisabled students were very similar to each other in two ways. First, the amount of time both groups preferred to spend in academic activities was similar. That is, the disabled students did not prefer significantly more or less time than the nondisabled students to study, to get involved in class discussions or to complete their assignments. It would appear that there is a similar degree of satisfaction between the two groups regarding their academic time commitments.

Second, the two groups' perceptions of their own study skills and habits, class interaction skills and ability to assert themselves in getting their academic needs met were not significantly different. This was found in the Hotelling T^2 tests as well as the more liberal T-tests. Even if the individual students had different frames of reference in measuring their levels of academic integration, the perceptions each person had of his/her own academic integration were similar.

There may be a relationship between the two ways in which the disabled students and nondisabled students were similar. For example, if one group preferred more time to study or complete assignments than the second group, the first group may also have been less satisfied with their academic integration, and greater differences between the groups would be evident. Therefore, it is not surprising that once the two groups were similar in one area, they were also similar in the second area. In other words, greater differences between the groups in one area could lead one to expect greater differences between the two groups in the second area.

It might be expected that the disabled students' perceptions of their time preferences in academic and social activities and of their academic or social integration would be significantly different from those of the nondisabled students. One might assume that, with physical limitations, disabled students required more time than what they were given to meet assignment deadlines and to get adjusted to academic and social demands on campus. The data do not support such an assumption. In fact, the data support an opposite view that no such difference really existed. One explanation regarding the similar time preferences between the groups may be that the disabled students were receiving extensions, when necessary, to complete their assignments, and they did not need more time in addition to what they were already receiving.

Regarding perceptions of academic integration, the no-difference between groups may be explained as follows: disabled students encounter barriers that prohibit them from demonstrating their cognitive and academic abilities. The barriers may be structural in the physical environment (e.g., stairs, doors, etc.) or may be internal to the student (e.g., inability to adequately see, hear or read). Once the structural barriers are removed or reduced (e.g., ramps, interpreters, notetakers are provided), the disabled students can function as well as nondisabled students. As a result, these students perceived themselves to be integrated into the academic environment of the University.

While grade point averages (GPA), years of university and age are usually good predictors of how the students perceived their academic integration, the data showed that these three variables were poor predictors. Strong predictors were the students' perceptions of their classroom interaction skills. The low correlations between GPA, year in university and age and the students' perceptions of their academic adjustment suggest that grades and years of experience in and out of university do not necessarily predict how students perceive their academic integration. In other words, "trying harder" to get better grades, or giving oneself more time to adjust to university life may not change the perceptions one has about his/her experiences in university.

These correlations suggest it is less likely that achieving better grades or taking more time to adjust to university life will improve a student's perception of his/her academic integration. However, it is unclear whether changes in the way students perceive their classroom interaction skills (i.e., discussion and interpersonal skills), would result in increased academic integration for these disabled students.

The data also showed that the disabled students' GPAs were not significantly different from the nondisabled students' GPAs. This similarity is understandable, given the two groups' similar perceptions of their academic integration. As indicated earlier, the disabled students, just like the nondisabled students, may have viewed their integration as related to their functional abilities in the classroom, and not to barriers which generally had been overcome.

Perceptions of social integration. A Hotelling T^2 test showed the disabled students' perceptions of their social activities and areas relating to social integration were similar to those of the nondisabled students. Supporting this finding are the data that show the two groups being similar in their participation in social activities within and outside of university, in their preferences for time in social activities, and in their perceptions of their social skills in social situations.

These findings present a picture of two groups of students who, together, are very similar in their socializing activities and preferences, as well as their perceptions of their social skills. Physical differences between the groups do not appear to have an impact on either their socializing activities or their perceptions of themselves in social situations.

These findings are supported by the literature from two perspectives. First, the disabled students' physical or structural differences probably have no greater relationship with their functioning in social activities than the nondisabled students' physical or structural differences. The assumption that disabled people and nondisabled people are different in their lifestyles, including social activities, was disputed by Schmidt and Sprandel (1980):

> There are forty million people in the United States who have some physical or mental handicap. They tend to spend their time much like anyone else--in work, school, the daily tasks of life, hobbies, recreation, and so on. It is reasonable to expect that disabled persons share interests and concerns with nonhandicapped persons. (p. 75)

Schmidt and Sprandel believed that it is a myth to assume that all disabled people view their disability as a tragedy affecting them constantly. Instead, "each must be considered as an individual who will deal with his or her disability in his or her own way" (p.74).

Penn and Dudley's survey (1980) of the perceptions disabled students had of their university experiences led them to similar conclusions. They contended that the attributes of self-concept and perseverance work equally in disabled persons and nondisabled persons:

> As in the case of any human being, [disabled persons] want to be as much a part of society as possible, to have friends, to take part in activities, and to reap the benefits of being involved with other people. (p. 356)

It was their conclusion that, with increased awareness by society, nondisabled persons would agree that disabled people and students are like themselves.

A second way in which the literature supports the findings is that the disabled students' perceptions of themselves in social situations are not seen as being different from those of nondisabled students (Bryan & Becker, 1980; Hameister, 1984). Bryan and Becker maintained that, while disabled students come from a variety of educational backgrounds and experiences, they are no more diverse than any other group of university students. According to Bryan and Becker, disabled students from residential schools may have had few opportunities to learn independent living skills and may have experienced social isolation, few reality checks and a lack of decision making skills to prepare them for university integration. Other disabled students may have learned more survival techniques in specialized day schools or in community-based traditional secondary schools. Yet, despite any disadvantages which the disabled students may have had, similar disadvantages are also likely to exist among nondisabled students. As a result, both groups come to university with personal limitations that may affect their perceptions and skills. In addition, many disabled students were nondisabled for much of their lives, but became disabled through accident or disease later in their lives. Penn and Dudley agreed with other researchers that "all persons have problems with which they must cope, for example, shyness, a poor memory, and so forth. The disabled adjust to their handicap in a similar way to other people who learn to live with personal limitations" (p. 356).

Hameister (1984), in her article discussing ways to meet the needs of disabled students, was in agreement with Bryan and Becker:

> For many disabled students ... the disbilility represents a very small part of the total self-concept. Students identify themselves by characteristics such as hometown, academic major, age, or interests--not by an inability to read small print or a need for crutches. (p. 71)

At the same time, however, the post-hoc analyses revealed a trend in the disabled students' views of their social interaction skills. From T-test results, it was found that, while the disabled students did not differ from the nondisabled students in their perceptions of their ability to make conversation with classmates, differences were found between the groups' views of their own ability to interact with others in out-of-class social situations. From these results, it may be the context in which the students are in which may be contributing to the disabled students' perceptions of their social skills. While both contexts--the classroom and out-of-class social interactions--involve similar skills such as accurate listening and verbal participation, the dynamics of interaction are different. It would appear, then, that other factors besides competence in listening and verbal skills would account for the difficulty disabled students perceived themselves to have in social situations.

The phenomenon of social distance might also have contributed to disabled students' perceptions of their social skills in different contexts. Support for this conclusion is found in Stoval and Sedlacek's (1983) study of nondisabled students' comfort levels with disabled students in different contexts. They researched the comfort levels that nondisabled college students had with their disabled peers for progressively removed situations. Their findings led them to conclude that nondisabled students respond more negatively to disabled people for situations in which they are forced into close contact than for situations where close contact is not required.

Social distance, in relation to the present study, may have affected the views of the disabled students with respect to their social skills. On the one hand, the classroom is an environment where disabled and nondisabled students can comfortably interact with each other. Interactions are more regular, formal and predictable in the classroom compared with social get-togethers. Social get-togethers, on the other hand, involve personal commitment and close contact with others. Students of either group may feel hesitant in going beyond the commitment that is found in classroom interaction. Some of the avoidance or silence exhibited in general by nondisabled persons toward disabled persons may have generalized or transferred to the social activities outside the classroom and influenced the perceptions of social integration of the disabled students.

Low correlations were found between the students' perceptions of their social integration (i.e., ability to converse with classmates and interaction with others in social situations) and their GPA in university or age. This was not surprising since other factors are probably involved with the students' perceptions of their social integration. For example, the students' social contacts could have encouraged or discouraged them from academic achievement;

perceptions of one's social integration may be more static than one's age or GPA; and, as indicated earlier, a student's perceptions may not relate to or be influenced by external evidence of his/her academic performance.

High correlations were found between the disabled students' perceptions of their ability to make conversation with their classmates and other social as well as academic perceptions. This suggests that one's social skills with classmates may be a common denominator for one's perceptions of both academic and social integration. In other words, factors such as self-initiative, assertiveness, self-concept and commitment may relate to how disabled students perceive their academic and social skills.

Future research, which focuses on disabled students' perceptions of themselves in general and how these perceptions affect other areas, may uncover factors which influence how disabled students see themselves in social situations. Later, in the discussion dealing with cross-group perceptions, this question will be raised again.

Perceptions of physical integration. The descriptive statistics on the students' perceptions of their physical integration on the campus showed a trend that is interesting. While the disabled students did not find the campus layout as difficult to learn during the first weeks on campus than the nondisabled students, they had more difficulty getting from place to place. What is interesting is first, 18 (44%) disabled students versus 9 (22%) nondisabled students participated in the university's orientation to the campus services during orientation week. Although the number of participants were not large in either group, the group that used it more indicated having less difficulty learning the campus layout.

Second, more disabled students had difficulty getting from place to place on campus. From written and verbal explanations given to the author by some mobility impaired students, it was apparent that they had experienced obstacles in their movement around campus. Although specific routes were in place to accommodate them, some problems arose. For example, at times students chose to use alternate routes or detours for various reasons (e.g., alternate routes between classes were used as they were shorter and/or kept the student out of the rain), but were met with obstacles. In addition, some of the accommodated routes were not properly maintained, according to some of the students. One student indicated that snow drifts not properly cleared away were impossible to get through by wheelchair. Others stated some ramped curbs were too steep or, at times, too slippery to allow them to maneuver their wheelchairs. These and similar responses indicate that, although disabled students had a good understanding of the campus layout, they experienced some difficulty moving around the campus.

Implications. Two implications can be made regarding the similarity between the two groups' GPAs. First, the disabled students' academic competence should give the university an excellent opportunity to show the general public how disabled students have been given an equal chance to achieve academic success within this university. Receiving an equal chance implies that acceptance and understanding attitudes exist among faculty (Moore et al., 1986). Second, there would be no reason to lower one's expectations of disabled students' academic potential because of their disabilities. Professors can be confident that, with the available disabled student services and academic accommodations, disabled students have the opportunity to succeed in their academic programs.

The perceptions disabled students have of their own academic, social and physical integration may be of interest to students, administration and faculty personnel. Generally, disabled students felt they were doing well in areas related to academic, social and physical integration, at least to levels comparable to the nondisabled students' perceptions. This is very encouraging. The implication is that disabled students perceived that they were "fitting in" with the academic, social and physical contexts of the University. It would also appear that disabled students were receiving services that ensured their integration needs were being met. This is supported by the positive ratings of the disabled student services. These findings will be discussed later.

At the same time, the disabled students' perceptions may be a measure of the effects of progress made in society regarding disabled people. There have been a number of changes in society that have been an influence on the increasing numbers of disabled students independently pursuing a postsecondary education (Haring & McCormick, 1986; Hartman, 1981; Hameister, 1984; Kirchner & Simon, 1984; Tuscher & Fox, 1971). Changes such as increased acceptance and accommodations and improved legislation, as well as advances in medicine, education and technology could have made an impact on the disabled students' perceptions of their integration in society in general. These perceptions may have carried over to that of the disabled students' university experiences. The many changes in society and the services and accommodations provided by the University together may have influenced the disabled students' responses on the questionnaire.

The data also suggested that the disabled students perceived their disabilities as structural, and not functional. In that case, successful integration is maintained by meeting disabled students' physical or structural needs.

The trend found in the disabled students' views of their social interaction skills may show what some of their less visible needs may be. For example, social distance between the groups may be the basis for promoting continued advocacy, awareness and positive interaction between the groups. Nondisabled students may need to become more aware that they can gain much through social interaction with disabled peers. Disabled students may wish to improve in their ability to interact socially. Both groups of students may also need University-sponsored activities to help initiate social contacts between them.

All of these needs can be met through various ways. To help nondisabled persons become more aware of the value of interacting with persons who are disabled, activities such as intramurals, panel discussions and class-sponsored activities may be planned (Moore et al., 1986; Porter, Rosenfield & Spaull, 1985). For genuine interaction to occur, it is agreed that these activities should involve participants from both groups. In addition, for disabled students to improve their social interaction skills, they could participate in role playing exercises, assertiveness training or group therapy (Orzek, 1984; Vogel, 1982).

The trend in the students' views of their physical integration shows that getting around on campus is more difficult for disabled students than for nondisabled students. Some research into the students' concerns may reveal what the problems referred to actually are, as well as what long or short term problem solving strategies are needed.

Involvement in Services and Activities

Academic involvement and activities. The results of the two groups' academic integration questions suggest that the disabled students' integration has been successful, and that mainstreaming, as Haring and McCormick (1986) defined it, has taken place at the University of Alberta. The data showed that the disabled students' use of academic services at the University was not significantly different from the nondisabled students. Preadmissions, admissions, registration, library and academic services were all used with similar frequencies. An implication here is that the services are accessible for disabled students, and that, like any student, disabled students are using them with equal frequency.

While the frequency of usage of the academic services were similar for the two groups, the actual frequencies were low. These services are intended for every student, and the data indicate that, on average, only 55% of the students were using them. With these results, there may be concern that students were not aware of these services, did not appreciate the benefits provided by these services, or did not need them.

Social involvement and activities. The results of Hotelling T^2 tests on the two groups' frequencies of involvement in social activities within and out of university show two similar groups of students. These results suggested that the disabled students have not isolated themselves socially. They are just as sociable as the nondisabled students.

The degree to which disabled students are involved with nondisabled students in social activities is not known. If the disabled students have kept to themselves, however, with little mixture among nondisabled students, the results demonstrate that there is potential for them to be integrated. The data shows that the groups were involved in similar social activities. Disabled and nondisabled students who have similar interests could get together, pursuing interests they have in common (Schmidt & Sprandel, 1980; Porter et al., 1985).

Physical involvement and activities. Descriptive results show that more disabled students than nondisabled students made use of the services that helped them become acquainted with the physical campus and available services. The disabled students showed that they made an attempt to become physically integrated, at least to the level of the nondisabled students.

Although more disabled students used the orientation and information resources than nondisabled students, the statistics show that the available services were not being used to maximum capacity by both groups. For example, less than half of the disabled students and less than a quarter of the nondisabled students used the orientation to the campus service; information such as maps and campus and community resources were also not fully accessed; and the library orientation workshop was used by 51% of the nondisabled students and 49% of the disabled students. Even physical integration services offered to prospective students prior to entering university were not well used. For example, the Open House and the preadmission interview were used by less than 35% of both groups of students.

There may be one or more reasons for the relatively poor use of services. One reason may be that the students were not familiar with these types of services and therefore not prepared to take advantage of them when they entered university. Orientation services are usually not necessary in the students' secondary schools. The university campus, on the other hand, is usually the first large network in which students experience long term independence. Therefore, students entering university may not be immediately familiar with orientation services that are provided prior to and during registration.

A second possible reason that is closely related to the first is that students who were aware of the services did not fully appreciate the value of such services. These students did not need these services before, so they may think they have no reason to use them now.

Another possible reason for the services being poorly used is that the services were inaccessible to a number of students for various reasons. For example, the schedule for the orientations may not have fit the students' schedules: students may have been working part time, traveling long distances to and from campus each day, or had other commitments during the time orientations were provided.

Implications for the academic, social and physical involvement and activities. It was noted that the frequency of services used by both disabled and nondisabled students was low. These services, intended for greater academic, social and physical integration, were being underused by both groups of students. This would suggest that integration on all three levels could be increased for both groups. Additional publicity techniques could be used to help the student body become more aware of the benifits and availability of the services. For example, a question on all students' registration forms could ask students interested in an orientation to sign up for a time suitable to them. Instructors could recommend the orientation to their students during the first one or two classes.

The similarity between the two groups' frequency in using the academic, social and physical services and activities on campus is encouraging. Not only were both groups accessing the services on equal levels, but their interests and involvement in social activities were similar. Recommendations made in the literature, such as promoting positive interaction between the groups, could be followed using the resources and activities that are already provided by the university's numerous organizations (Porter et al., 1985; Stovall & Sedlacek, 1983). With increased positive interaction between disabled students and their nondisabled peers and staff, integration and acceptance would be promoted between and among the groups.

Disabled student services. The disabled students were given a separate section in the questionnaire to rate the disabled student services they used, to indicate which services they still required, and to provide some specific data about their disabilities. In examining the disabled students' responses, some of the concerns raised in the literature regarding services for disabled students are addressed.

First, the services that were available at the University of Alberta at the time of the study have been recommended in the literature. By indicating that these services were helpful, the students were in agreement with the literature on what services were needed and useful.

Second, the services the University provided were given very positive ratings by the students who used them. These services may have contributed to the disabled students' academic, social and physical integration. Without services that are efficiently provided, students will be less likely to perceive that they are "fitting in" to a university setting that has numerous academic, social and physical obstacles. These obstacles would in effect have indicated to the disabled students that they were not welcome (Shanhouse & Yates, 1980; Tuscher & Fox, 1971).

The implication given by the disabled students' positive ratings is that the services are neutralizing the effects of the disabled students' structural disabilities. In the questionnaire, 85% of the disabled students who used services for disabled students expressed positive ratings for these services. It becomes clear that an adequate or effective support system is likely in place for the majority of the disabled students who use the services. Such a strong support system takes away structural obstacles that would penalize students within their academic program. In effect, it provides disabled students equal opportunities to succeed in their academic programs (Tuscher & Fox, 1971).

It should be noted that from the questionnaire responses only 22% of all the possible disabled student users actually used the services. Although this number was relatively small, these services appear to have been well utilized by the users. With the users' positive ratings and the disabled students' GPAs that were comparable to those of the nondisabled students, it appears that the disabled students were being given an equal opportunity to succeed in their programs.

Third, the services for disabled students appear to be adequate and appropriate. However, the following observations are made regarding the extent that these services were meeting the disabled students' needs:

a. From the disabled students' responses, it appears that some of the services were not known to some of the students. For the question asking the students to indicate what services they still needed, 13 services were mentioned. Some services requested were already available (e.g., mobility assistance, counselling, volunteer readers, and extensions for assignments).

b. Several of the unavailable services that were mentioned probably could be accessed by means presently available in the University. For example, the need for assistance in the bookstore because the aisles were too narrow could be met by widening the aisles and ensuring bookstore personnel are available to help these students. The need for tutors could be met through the volunteer program within the Disabled Student Services office.

c. Needs are constantly changing, due to changes in disability conditions, weather, course requirements and emotional/social needs of the students. Services are dynamic, and so the ratings, although encouraging, may change.

Fourth, the University of Alberta's admissions procedures appeared to cause some problems for disabled students who required registration assistance but were unaware of its availability. It is possible that, since preadmissions and admissions procedures do not include requesting information regarding a student's disability, disabled students were not referred on time to the Disabled Student Services office for assistance.

Fifth, the disabled students seemed to require relatively few services. Several reasons may account for this. One is that some disabled students have had their own equipment or already had access to equipment and/or services from a community organization. By the time disabled students reach university age, they may have acquired the tools necessary to study and get around independently. For example, some of the visually impaired students in the study had their own enlargening equipment or used equipment available from the CNIB.

A second reason for the relatively few services being used is the fact that several services are available to meet one type of need. Each student might use only one of the group of services intended for that one need. Unlike the regular university services where one service is intended to serve all university students, the disabled students can choose from several services, according to their needs. For example, to help hearing impaired students with their notetaking, they could use an interpreter, a notetaker, and/or the instructor's notes, or none of these services, depending on their needs and the services they used in the past. For visually impaired students' reading needs, one or different combinations of equipment may be used, such as the Versabraille, Kurzweil Reading Machine, Optacon, Voice Synthesizer, or closed circuit T.V. (Haring & McCormick, 1986).

Implications for the disabled student services. The requests for services made by the disabled students imply that the service delivery system continues to be a dynamic process. Disabled students' needs are not static, and it appears necessary that their support system be flexible. This could be achieved by an advocate such as a liaison person and/or committee which could consider each request and refer the students to available resources.

A wide range of services were being used by a few disabled students. However, disabled students have a variety of needs and characteristics, and as a result, require a range of services available to them (Anderson & Coons, 1979).

The services that were unavailable for several students indicates the importance of self-advocacy on the part of disabled students (Pinder, 1979; Scales, 1986). Disabled students' needs are extremely varied and circumstances on the campus can change from day to day without service personnel being aware of them. For example, since students often use different classes and buildings from semester to semester, requirements to change architectural and/or classroom equipment is ongoing; services such as mobility assistance or snow removal may require attention. In addition to self-advocacy, a contact or liaison person for disabled students appears beneficial. Such a person could ensure that the students' requests would be carefully considered and referral to other service agencies would be made, when necessary (Pinder, 1979).

Cross-group Perceptions

Trends found in the post-hoc analysis are discussed in this section. Although significant differences were not found in the Hotelling T^2 analyses, the trends have provided some understanding of how disabled and nondisabled students tend to perceive each other.

Academic perceptions. When the students were asked to compare themselves to nondisabled students and to disabled students, both groups of students perceived significant differences to exist between nondisabled and disabled students. The differences between the two groups were in the areas of study skills and habits, interaction in class, ability to assert self in getting academic needs met and in the time taken to become familiar with university life. Both disabled and nondisabled individuals perceived themselves as doing better academically than disabled students as a group.

This trend has several interesting points. First, little interaction must be occurring between disabled and nondisabled students in academic related activities such as comparing test results, homework assignments, and group or research projects. Even if the only information the two groups shared was each other's GPAs, which, according to the data, are not significantly different, the similarity of disabled and nondisabled students' academic ability would be obvious to the students.

Second, disabled students probably had little interaction amongst themselves, since the disabled student group felt they were doing much better than other disabled students. With relatively few disabled students on campus, the disabled students do not have many opportunities to work with other disabled students.

Third, there appears to be a paradox in both groups of students feeling disabled students were doing more poorly than themselves. The disabled students were stating that they themselves were not the disabled students who were doing so poorly. One reason for this discrepancy may be that, as Babbitt, Burbach and Iutcovich (1979) found on one college campus, physically disabled college students are being stigmatized as having lower mental abilities. The disabled students as well as the nondisabled students in this study may have contributed to this view.

Another reason why disabled students and nondisabled students saw themselves as doing better than disabled students collectively may be that people generally learn to adapt to their own circumstances, but others will appear to have comparatively greater difficulties. Disabled students may have adopted a "How do they manage with their disability?" view toward other disabled students, as a disability other than one's own may appear harder to cope with. Nondisabled students may simply wonder how any disabled student could cope with their disability (Demetrulias et al., 1982).

The two groups' perceptions of doing much better than disabled students implies that both groups of students may not be fully aware of the academic successes and overall progress of disabled students. If awareness exists between and among the groups, the fallacy that disabled students "out there" are doing more poorly may become less prevalent. In addition, the disabled students' perceptions of themselves compared to other disabled students implies that disabled students did not think they themselves were at a disadvantage compared to nondisabled students.

Social perceptions. The perceptions the students had of disabled students for the academic situations were similar to the social integration situations. A trend was found in how the disabled students perceived their social interaction skills compared to how the nondisabled students perceived their own social interaction skills. However, the disabled students felt they themselves were doing better than other disabled students when interacting in both class and social situations.

There is no measure to actually validate and compare the groups' perceptions of their social integration levels. However, regarding the questions of this study, the results of the disabled students' perceptions of their social integration are encouraging for two reasons.

First, although the disabled students felt they had some difficulties in socializing, they felt they were doing comparatively better than other disabled students. Knowing whether there are students doing worse than oneself is not important. The disabled students' views reflect optimism, for they were inferring, "Although I may have some problems, I don't think I'm doing too badly".

Second, the disabled students' confidence in their social skills may have been influenced by previous questionnaire responses. Earlier in the questionnaire, the students indicated their involvement in university and nonuniversity social activities. This exercise may have resulted in a positive perception of their social integration. In other words, the students could have thought, "I do attend these activities, meet with these friends and have these hobbies, so I must be better off than other disabled students".

Implications. The fact that both disabled students and nondisabled students felt they were doing better than disabled students "out there" in academic and social areas implies a need for increased awareness that "those disabled students out there" do not exist. This increased awareness can be facilitated with positive interaction in academic and social environs. For example, classroom discussions, projects, experiments, homework assignments and field experiences may involve pairs or small groups made up of disabled and nondisabled students working together. Social activities within the Univeristy setting can be used to encourage integration of disabled students with those who are not disabled. For example, a drama production could utilize disabled students as part of the plot as well as support crew; intramurals can involve players in wheelchairs, whether they are disabled or not. The interactions would be positive when disabled and nondisabled students complement each other's resources and strengths, so that "each person perceives that there is something to gain in the relationship" (Stovall & Sedlacek, 1983). Increased awareness between the two groups regarding the disabled students' academic competence and personal interests could encourage more interaction and understanding of disabled students' abilities.

Education personnel working with disabled students should also be fully aware of disabled students' academic and social competence and perceptions of integration. This is important for several reasons:

1. The data regarding the disabled students' relative success in their academic programs and their perceptions of their academic integration could be valuable information when encouraging prospective students with disabilties to enroll in postsecondary programs. In addition, the role of disabled student services could be explained to assure skeptical persons with disabilties that they do have an equal chance to succeed in university.

2. The University's administration and teaching staff may become more aware of the important role of the disabled

student services. Not only would the university's administration and teaching staff support the existence of these services, but they could encourage disabled students to use them. The administration and teaching staff may also become more involved in the disabled student services' advertising efforts (e.g., posting ads within the departments).

3. The administration and teaching staff's confidence in disabled students' academic performance may change the attitudes of people who hold lowered perceptions and/or unrealistic attitudes toward disabled students. Attitudes of others could affect the way a disabled student sees him or herself, and, if these attitudes are negative, they may negatively influence disabled students' perceptions of their integration in university. Negative and unrealistic attitudes may also encourage social distance between nondisabled and disabled students, as each group perceives the other as either academically inferior or prejudiced.

Increasing the awareness of university administration and teaching staff may be achieved through the advocacy efforts of Disabled Student Services personnel, current students with disabilities, and teaching staff who have worked successfully with disabled students. Information regarding the abilities and needs of disabled students could be provided by these persons. For example, statistics of the academic achievements of disabled students; how disabled student services have been effective for individual students; accounts of how students with various disabilities have overcome the effects of their disabilities with academic modifications; and a listing of available services and academic accommodations, and how disabled students can access them.

Conclusions

The purpose of this study was to examine the perceptions of disabled students who were attending the University of

Alberta regarding their academic, social and physical integration. By using a matched group of nondisabled students, the disabled students' perceptions were given perspective. It was found that the disabled students had very similar views of their integration as those of the nondisabled students, providing the conclusion that these two groups of students are not different from each other in their views of themselves as students. The results in the study found the two groups to be not significantly different in the following areas:

1. Degree of involvement in formal and informal activities;
2. Extent of use of university student services;
3. GPA;
4. Preferences for more/less time in academic and social activities;
5. Perceptions of academic, social and physical integration; and,
6. Perception that disabled students are doing more poorly than oneself.

Descriptive statistics of the disabled students' views of the University's services for disabled students were found to be very positive. From the results, it was concluded that the services were meeting these students' needs, but that the service delivery system should continue to be part of a dynamic process where services develop and/or change, according to the characteristics and changing needs of these students.

Limitations of the Study

In order to obtain answers to the questions in this study, a few factors could not be controlled by the author, resulting in some limits being placed on the study. One factor limiting the study is the number of disabled students in each disability group. The four disability groups were not equal in number and the number of learning disabled, hearing impaired and visually impaired students were very small. It is not known if the group of mobility impaired students were large in number because they were easier to recognize or because there simply were more mobility impaired students on the campus.

A second factor affecting the study was the two groups' socio-economic status. Although this demographic factor was not analyzed for significant differences, more disabled students classified themselves in the upper-middle to upper class status. The socio-economic status of disabled students attending university has not been an issue in the literature, and therefore was not included in this study. It may be appropriate to investigate whether disabled students' socio-economic status is a factor in making postsecondary education possible for disabled students.

A third factor influencing the overall results was that the students' perceptions regarding their academic, social and physical integration were not substantiated by objective data. However, in this study, integration was defined by the perceptions students had toward their involvements in university. A study which subtantiates students' perceptions with empirical evidence would have to use a different working definition of integration. Such research, though useful, was beyond the scope of the present study.

Directions for Further Research

The results of this study have shown the disabled and nondisabled students' perceptions of their academic, social and physical integration to be similar. At the same time, it was found that both groups were not fully using university services that could improve their integration. In addition, both groups tended to perceive disabled students to be different from them, and the disabled students tended to perceive their social skills to be poorer than nondisabled students. Research could be continued in the area of disabled students' integration by utilizing these results. In addition, the limitations in this study could be taken into account in future studies. The following research suggestions may further the understanding of disabled students attending postsecondary institutions:

1. The disabled students reported having higher socio-economic status than the nondisabled students. It may be appropriate to determine whether strong financial backing has an influence on disabled students' entry into postsecondary education.
2. From the data it appeared that few disabled and nondisabled students utilized services available to them. It seems appropriate to investigate whether this might be caused by a lack of information about the services, a lack of need in the services available or whether different services may be required.
3. The disabled students perceived themselves as doing less well socially outside of class situations. It may be helpful to investigate techniques that could facilitate meaningful integration of disabled and nondisabled students in social contexts.
4. The disabled students' perceptions of their disabilities did not appear to interfere with their academics to a great extent. A study might be done to examine how much of a university student's disability is perceived by him or her to be structural and functional, and how these concepts relate to the different disabilities.
5. This study was limited by a relatively small number of disabled students. It would be appropriate to replicate this study using a larger number of disabled students, preferrably with equal numbers in each disability group.

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APPENDIX A

Definitions, Characteristics and Needs of Mobility Impaired, Learning Disabled, Hearing Impaired and Visually Impaired Students

Students with Mobility Impairments

Definition. A mobility impaired person has an orthopedic impairment related to disorders of the skeleton, joints and muscles. Some examples are impairments caused by cerebral palsy or diseases such as poliomyelitis or bone tuberculosis; amputations; contractures (i.e., permament shortening of a member); and clubfoot (Haring & McCormick, 1986). These disabilities may include limited control in large and/or small muscular skills.

Characteristics and Needs. Many students with conditions such as spina bifida, paralysis, muscular dystrophy, or cerebral palsy are unable to walk. As a result of these impairments, a wheelchair may be required. These students may also have limited control of arm and hand muscles. A manual or powered wheelchair or scooter would then be required for their mobility needs. For some mobility disabled students, speech may also be affected (e.g., students with cerebral palsy (CP) and muscular dystrophy). For these students, speech interpreters may be needed. Students who have had an amputation of one or both legs might use prostheses or crutches to walk. Students with hemiplegia (i.e., paralysis of one side of the body) or multiple sclerosis may walk more slowly, with or without a limp, and may not require additional support. However, a cane may be used for those with severe balance or support needs.

Students with Learning Disabilities

Definition. The following definition of learning disabilities has been accepted by the University of Alberta Task Force on Learning Disabilities (1979):

> Children, youths and adults with learning disabilities are those who manifest a significant discrepancy between their estimated learning potential and actual performance. This discrepancy is related to basic disorders in the learning processes which may or may

> not be accompanied by demonstrable central nervous system dysfunction and which are not secondary to sensory loss, mental retardation, primary emotional disturbance or environmental disadvantage. (p.3)

Characteristics and Needs. Defining and identifying persons with learning disabilities has not been an easy task since there is little agreement among professionals regarding criterea for identifying learning disabled persons (Goldberg, 1984; Vogel, 1982). The main reason for this difficulty is because learning disabilities consists of a broad range of characteristics, with no two learning disabilities being alike (Sprandel, 1982). It is therefore difficult to conceptualize learning disabilities into a simple framework.

The symptoms of learning disabled college students have been categorized into three broad areas: academic, processing and social and emotional (Putnam, 1984). Subcategories of academic disabilities of learning disabled (LD) college students include a) general deficits (e.g., weak study habits, poor short and long attention span, disorganized thoughts, etc.); b) reading problems (e.g., poor comprehension, excessive vocalizing, word-by-word reading); c) written language difficulties (e.g., reversing letters/words/phrases, poor organization, difficulties in copying); d) problems in mathematics (e.g., slow rate of perception; difficulty in remembering steps); e) oral communication (e.g., makes inappropriate responses, difficulty in articulation, slow speech rate); and, f) disabilities in auditory perception (e.g., ignores, confuses and/or forgets verbal directions) (Adams, 1985; Goldberg, 1984; Faigel, 1985; Kahn, 1980; Nayman, 1982; Vogel, 1982).

Processing characteristics in some LD students have also been observed in their study skills. Many of these students have difficulty taking notes while listening to lectures, making decisions in objective tests, and understanding reading material. Organizing and completing assignments on time can be overwhelming for some LD students (Goldberg, 1984; Vogel, 1982).

Learning disabled students who have social and emotional problems often do not possess the "subtle" skills of social interaction (Barbaro, 1985; Brown, 1982; Cordoni, 1982b; Sprandel, 1982, Vogel, 1982). Some characteristics such as inability to interpret another's reactions, loud or immature speech, and inappropriate responses and/or actions may cause others to avoid the LD person.

A variety of coping strategies and services are being used by LD college and university students. Each strategy or service is intended to circumvent the student's disability and to work with the student's areas of strength (Kahn, 1980; Vogel, 1982). For example, students with academic difficulties will acquire a tutor for specific courses and/or their written language needs, receive extra time to complete assignments, and/or have exams taken orally; students with difficulty in processing oral information often tape their class lectures, use a notetaker, and/or have their textbooks taped; students with social interaction difficulties may participate in support groups and/or counselling (Adams, 1985; Barbaro, 1985; Brown, 1982; Faigel, 1985; Kahn, 1980; Nayman, 1982; Vogel, 1982).

Students with Hearing Impairments

Definition. A deaf person is one whose hearing disability is so great that he or she cannot understand speech through use of the ear alone, with or without a hearing aid. A hard-of-hearing person is one whose hearing disability makes it difficult to hear, but who can, with or without the use of a hearing aid, understand speech (Gearheart, 1980).

Characteristics and Needs. For most deaf students, English is a second language, as they communicate primarily in American Sign Language (ASL) (Davidson, Falvo & Woltz, 1981). The majority of deaf students enter postsecondary settings like non-native speakers of English. As ASL is very different from English (e.g., usage of time, space, articles and verbs, etc.), many deaf persons also have difficulty reading and writing English (Davidson et al, 1981). A study on deaf students' reading comprehension at the National Technical Institute of the Deaf (NTID) indicated that, in 1976, 71.5 percent of the students could understand only up to one half of the message in written English (i.e., grade levels scored from below 5.0 to 7.9; Wilson, J.J., 1981).

The use of sign language interpretation also does not guarantee that deaf students will fully understand college level class lectures. It was found that only 50 percent of students entering NTID did not know manual communication well enough to fully comprehend a lecture (Wilson, J.J., 1981). The level of vacabulary and concepts were too high for these students. In close relationship to comprehension difficulties, deaf and hearing impaired students must concentrate almost totally on understanding what is being said; necessary synthesis of the information may not occur. Wilson (Wilson, F., 1980) stated, "The degree of learning is reasonably proportional to the time spent on content minus the time spent trying to find out what is going on" (p.174). In his analysis of hearing impaired high school graduates (i.e., deaf and hard of hearing students) in the Maritime provinces, Cayton (1983) noted little opportunity was available for these students to enter postsecondary programs. This was because of their low levels of academic achievement upon graduation from secondary schools. However, he believed some of these students have university potential, given that they receive appropriate services.

Hearing impaired students need services that provide them access to oral language in the class as well as in social contests. For example, many hearing impaired students with residual hearing wear hearing aid amplification systems. However, these aids do not selectively amplify desired speech; environmental noise, reverberation and distortion occur due to the aid amplification of all sounds (Gauthier, 1982; Simon, 1981). As a result, most hearing impaired students rely very heavily on speechreading (i.e., interpreting facial expression and body movements as well as lip movements (Bouquin, 1984)). In class, haeaing impaired stuents may use an interpreter, a person who provides the ASL equivalent of the lecture/discussion, or repeats the lecture with lip movemtns forthe student to read (i.e. lip speaking), or provides the signs with little change in language (i.e., transliteration). The student may also need notetaking services for class lectures (Cayton, 1983; Morket & Funckes, 1985; Humphries, 1985; Reich & Johnson, 1982; Simon, 1981; Wilson, J.J., 1981).

Students with Visual Impairments

Definition. A legally blind person has a "visual acuity for distance vision of 20/200 (i.e., ability to see at 20 feet what the normal eye can see at 200 feet) or less in the better eye with the best possible correction or field vision no greater than 20 degrees... Individuals who are visually limited or have low vision may be legally blind" (Haring & McCormick, 1986). An educationally blind person has no sight or has light perception only (i.e., ability to distinguish the absence or presence of light). A low-vision person has limitations in distance vision, but may be able to see objects or materials at a distance of a few inches/feet through the use of optical aids, environmental modifications and/or techniques (Gearheart, 1980; Haring & McCormick, 1986).

Characteristics and needs. According to statistics compiled by the Canadian National Institute for the Blind (CNIB, 1984), 15 to 20 percent of visually impaired people are totally or educationally blind. The remaining 80 percent fall under the "legally blind" category and usually have some residual vision ranging from light perception or light projection to 20/200. A very small number of this group (approx. 4.5%) have "fields", where the person's peripheral vision, with correction, does not exceed twenty degrees. A more common term for this condition is "tunnel vision".

The needs of the low vision and blind students at the postsecondary level fall in four basic categories: independent travel or mobility (e.g., raised maps and symbols, electronic travel aids); study aids (e.g., Versabraille, Kurzweil Reading Machine, Speech synthesizer, Optacon); teaching style accommodations (e.g., oral cueing); and academic modifications (e.g., alternate assignment procedures, extensions for assignment deadlines) (Haring & McCormick, 1986).

APPENDIX B

Questionnaire for Disabled Students and Nondisabled Students

DATE:______________

Dear Student at the University of Alberta,

Your time and thoughtful consideration to this questionnaire will benefit this research project. You may know or encounter other students who are partially sighted or blind, learning disabled, hearing impaired or deaf, or mobility impaired. You and they are on the frontier of postsecondary education for students with unique needs. Colleges and universities across Canada and the U.S.A. are learning how to best meet your needs. Your participation in responding to this questionnaire will provide a greater understanding of the current scene on campus. Your experiences as a student progressing through university are important to this project. Your ideas and thoughts will provide useful feedback to concerned educators in postsecondary institutions. Please answer all the questions below. Feel free to make a comment or ask for a clarification.

DATE:________________

Dear Student at the University of Alberta,

Your time and thoughtful consideration to this questionnaire will benefit this research project. You may know or encounter students who are partially sighted or blind, learning disabled, hearing impaired or deaf, or mobility impaired. These fellow students are on the frontier of postsecondary education for students with unique needs. Colleges and universities across Canada and the U.S.A. are learning how to best meet the needs of these special students. Your participation in responding to this questionnaire will provide a better understanding of the current scene on campus. Your experiences as a student progressing through university are important to this project. Your ideas and thoughts will provide useful feedback to concerned educators in postsecondary institutions. Please answer all the questions below. Feel free to make a comment or ask for a clarification.

A. GENERAL INFORMATION

1. Number of courses taken this semester:_____

2. Student status. Check: (1)___Full-time (2)___Part-time

3. Faculty. Check:

___Educ.	___Arts	___Science	___Other:	______________
(1)	(2)	(3)	(4)	(specify)

4. Major: __________________

5. Current G.P.A. (approx.) Check:

(1)___(0-2.9) (2)___(3-3.9) (3)___(4-4.9) (4)___(5-5.9)

(5)___(6-6.9) (6)___(7-7.9) (7)___(8-9)

6. Year in university. Check one:

__1st	__2nd	__3rd	__4th	__5th	__6th	__7th	__8th+
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

7. Sex. Check: (1)___Female (2)___Male

8. Age. Check: (1)__18-19 (2)__20-21 (3)__22-23 (4)__24-26

(5)__27-29 (6)__30-35 (7)__36+

9. Parents' Socio-economic Status. Check one:

__Lower	__Lower-Middle	__Middle	__Upper-Middle	__Upper
(1)	(2)	(3)	(4)	(5)

10. Permanent home. Check:

__Rural	__Small	__Suburban	__Urban
(1)	Town (2)	(3)	(4)

11. About how many disabled people do you:

a) know well? (e.g., friend, reletive) ____________

b) know somewhat? (e.g., acquaintance) ____________

B. PRE-UNIVERSITY PREPARATION

Of the following pre-university activities, please indicate how helpful they were to you. Circle, using the following code:

0 =	1 =	2 =	3 =	4 =
Did not use	Extremely helpful	Somewhat helpful	Not very helpful	Misleading; confusing

Pre-Admission/Information Sources	Did not use	Extremely helpful			Misleading; confusing
1. High school advisor	0	1	2	3	4
2. High school teacher	0	1	2	3	4
3. Provincial Career Centre	0	1	2	3	4
4. Mailed information	0	1	2	3	4
5. University friend	0	1	2	3	4
6. Pre-admissions interview	0	1	2	3	4
7. Open House/visit	0	1	2	3	4
8. OTHER:________________ (please specify)		1	2	3	4

Admission Information

1. Mailed information Re: admission/registration	0	1	2	3	4
2. Academic advisor(s)	0	1	2	3	4
3. Faculty Information office (e.g., secretary)	0	1	2	3	4
4. Calendar, timetables, registration info.	0	1	2	3	4
5. Other:________________ (please specify)		1	2	3	4

C. ORIENTATION ON CAMPUS

Regarding your first few weeks on campus, please indicate how each helped you become oriented to the campus:

	Did not use	Extremely useful			Misleading; confusing
1. Orientation to physical campus (Student services)	0	1	2	3	4
2. Friend's help	0	1	2	3	4
3. Map(s)/guide(s)/handbook	0	1	2	3	4
4. Passerby	0	1	2	3	4
5. Other:________________ (please specify)		1	2	3	4

6. In your first weeks on campus, how difficult was it for you:

a) to learn the physical layout of the campus? Check one:

(1)__Very difficult	(2)__Somewhat difficult	(3)__A little difficult	(4)__Not at all difficult

b) to get from one place to another on campus (i.e., mobility)? Check one:

(1)__Very difficult	(2)__Somewhat difficult	(3)__A little difficult	(4)__Not at all difficult

D. REGISTRATION PROCESS

Regarding your registration process, please indicate how helpful you found the following:

1. Pre-registration (academic) orientation	0	1	2	3	4
2. Friend/student's help	0	1	2	3	4
3. Registration personnel	0	1	2	3	4
4. Other:______________ (please specify)		1	2	3	4

Note: The disabled students only received inset pages 5 and 5a. The inset given to each disabled student corresponded with his or her disability.

E. SERVICES FOR STUDENTS WITH LEARNING DISABILITIES

1. For each of the services below, circle ONE (1) number:
If you do NOT USE it, circle "0", OR

If you USE it, indicate how useful it is to you.
Circle:

1 = Extremely useful TO 4 = Detrimental; made things worse, OR

If you NEED IT, and it is NOT AVAILABLE, circle "7".

	Did not use	Extremely useful			Detri- mental	Need; not available
1. priority registration	0	1	2	3	4	7
2. notetaker	0	1	2	3	4	7
3. specialized counselling	0	1	2	3	4	7
4. oral examiner/exam reader	0	1	2	3	4	7
5. cassette recorder	0	1	2	3	4	7
6. typewriter	0	1	2	3	4	7
7. OTHER:________________________ (please specify)		1	2	3	4	7

2. Of the following offices/organizations that provide special services, please indicate which one provides most of your services with a "1". Use a "2", "3", etc. if more services are used, but as 2nd, 3rd sources.

(1) ___ my faculty
(2) ___ Disabled Student Services
(3) ___ Community Organization:________________
(4) ___ OTHER:_________________________
(please specify)

3. Do you require any additional services?

(1) ___Yes--What are they? ____
____
(2) ___No

4. a) What is the nature of your learning disability? List them in order: "1" for primary disability, "2" for secondary, etc.

(1)___Reading

(2)___Math

(3)___Language (e.g., Spelling, Writing)

(4)___Perceptual (e.g., perceiving, discriminating)

(5)___Memory

(6)___Attention

(7)___Other:___________________________

(please specify)

b) What is the extent of your primary learning disability (i.e., "1" in 4a) above)?

(1)___mild (2)___moderate (3)___severe (4)___profound

E. SERVICES FOR STUDENTS WITH HEARING IMPAIRMENTS

1. For each of the services below, circle ONE (1) number:
If you do NOT USE it, circle "0", OR

If you USE it, indicate how useful it is to you.
Circle:

1 = Extremely useful TO 4 = Detrimental; made things worse, OR

If you NEED IT, and it is NOT AVAILABLE, circle "7".

	Did not use	Extremely useful			Detrimental	Need; not available
1. priority registration	0	1	2	3	4	7
2. notetaker	0	1	2	3	4	7
3. specialized counselling	0	1	2	3	4	7
4. interpreter	0	1	2	3	4	7
5. exam interpreter	0	1	2	3	4	7
6. FM system	0	1	2	3	4	7
7. OTHER:______________________ (please specify)		1	2	3	4	7

2. Of the following offices/organizations that provide special services, please indicate which one provides most of your services with a "1". Use a "2", "3", etc. if more services are used, but as 2nd, 3rd sources.

(1) ___ my faculty
(2) ___ Disabled Student Services
(3) ___ Community Organization:_______________
(4) ___ OTHER:________________________
(please specify)

3. Do you require any additional services?

(1) ___Yes--What are they? ____
____
(2) ___No

4. a) What is the extent of your impairment?

(1)___mild (27 - 40 db)

(2)___moderate (41 - 55 db)

(3)___moderately severe (56 - 70 db)

(4)___severe (71 - 90 db)

(5)___profound (91 db+)

5. What aids do you use for hearing on a permanent basis?

(1)___1 behind-the-ear aid

(2)___2 behind-the-ear aids

(3)___binaural body aid

(4)___monaural body aid

(5)___NONE

(6)___OTHER:________________________(please specify)

E. SERVICES FOR STUDENTS WITH MOBILITY IMPAIRMENTS

1. For each of the services below, circle ONE (1) number:
If you do NOT USE it, circle "0", OR

If you USE it, indicate how useful it is to you.
Circle:

1 = Extremely useful TO 4 = Detrimental; made things worse, OR

If you NEED IT, and it is NOT AVAILABLE, circle "7".

	Did not use	Extremely useful			Detri-mental	Need; not available
1. priority registration	0	1	2	3	4	7
2. notetaker	0	1	2	3	4	7
3. specialized counselling	0	1	2	3	4	7
4. exam writer	0	1	2	3	4	7
5. cassette recorder	0	1	2	3	4	7
6. typewriter	0	1	2	3	4	7
7. modified worktable	0	1	2	3	4	7
8. OTHER:______________ (please specify)		1	2	3	4	7
TRANSPORTATION ON CAMPUS						
9. ramps	0	1	2	3	4	7
10. elevators	0	1	2	3	4	7
11. vehicle for inter-buildings' access	0	1	2	3	4	7
12. occasional assistance	0	1	2	3	4	7
13. regular assistance	0	1	2	3	4	7
14. Fire Wardens in buildings	0	1	2	3	4	7
15. OTHER:______________ (please specify)		1	2	3	4	7

2. Of the following offices/organizations that provide special services, please indicate which one provides most of your services with a "1". Use a "2", "3", etc. if more services are used, but as 2nd, 3rd sources.

(1) ___ my faculty

(2) ___ Disabled Student Services

(3) ___ Community Organization:_______________

(4) ___ OTHER:_______________________
(please specify)

3. Do you require any additional services?

(1) ___Yes--What are they? ____
____

(2) ___No

4. a) How much of your body is affected by your impairment?

(1)___Monoplegia (2)___Paraplegia (3)___Hemiplegia (4)___Diplegia

(5)___Quadriplegia (6)___Amputee, BK (7)___Amputee, AK

(8)___Other:___________________ (please specify)

5. What mobility aid do you use on a permanent basis? Check one:

(1)___crutches/cane (4)___powered scooter

(2)___manual wheelchair (5)___NONE

(3)___powered wheelchair (6)___OTHER:_______________(please specify)

E. SERVICES FOR STUDENTS WITH VISUAL IMPAIRMENTS

1. For each of the services below, circle ONE (1) number:
If you do NOT USE it, circle "0", OR

If you USE it, indicate how useful it is to you.
Circle:

1 = Extremely useful TO 4 = Detrimental; made things worse, OR

If you NEED IT, and it is NOT AVAILABLE, circle "7".

	Did not use	Extremely useful			Detrimental	Need; not available
1. priority registration	0	1	2	3	4	7
2. cassette recorder for class lectures	0	1	2	3	4	7
3. specialized counselling	0	1	2	3	4	7
4. exam writer	0	1	2	3	4	7
5. typewriter	0	1	2	3	4	7
6. electronic visual aid	0	1	2	3	4	7
7. electronic calculator	0	1	2	3	4	7
8. talking computer terminal	0	1	2	3	4	7
9. brailler	0	1	2	3	4	7
10. tactile maps	0	1	2	3	4	7
11. Versa braille	0	1	2	3	4	7
12. Reader	0	1	2	3	4	7
13. enlarged print	0	1	2	3	4	7
14. braille material	0	1	2	3	4	7
15. OTHER:________________________ (please specify)		1	2	3	4	7

2. Of the following offices/organizations that provide special services, please indicate which one provides most of your services with a "1". Use a "2", "3", etc. if more services are used, but as 2nd, 3rd sources.

(1) ___ my faculty
(2) ___ Disabled Student Services
(3) ___ Community Organization:________________
(4) ___ OTHER:_________________________
(please specify)

3. Do you require any additional services?

(1) ___Yes--What are they? ____
____
(2) ___No

4. How do you classify your impairment? Check one:

(1)___fields
(2)___20/100
(3)___20/100 to 20/199
(4)___20/200+
(5)___light perception/light projection
(6)___NIL/TOTAL

5. What visual aid for mobility do you use on a permanent basis? Check one:

(1)___guide dog
(2)___cane
(3)___NONE
(4)___OTHER:_______________(please specify)

F. SERVICES FOR ALL STUDENTS

For each of the following, please indicate how useful they were to you. Circle:

Library Services	Did not use	Extremely useful			Detrimental; made things worse
1. study carrels	0	1	2	3	4
2. librarian/staff	0	1	2	3	4
3. periodicals	0	1	2	3	4
4. ERIC/computer search	0	1	2	3	4
5. microfiche/card catalogue	0	1	2	3	4
6. library workshop orientation	0	1	2	3	4
7. other:________________ (please specify)		1	2	3	4

Student Services	Did not use	Extremely useful			Detrimental; made things worse
1. maps	0	1	2	3	4
2. information on campus & community resources	0	1	2	3	4
3. counselling: vocational	0	1	2	3	4
4. counselling: personal	0	1	2	3	4
5. remedial course (academic)	0	1	2	3	4
6. remedial course (written language)	0	1	2	3	4
7. tutor	0	1	2	3	4
8. other:________________ (please specify)		1	2	3	4

G. EXTRA-CIRRICULAR ACTIVITIES

For each of the following activities, please indicate how often you attend. Use the following code:

0 =	1 =	2 =
Never attend	Attend sometimes	Attend regularly

Formal (Non-University)

1. SPORTS CLUBS (e.g.,hiking groups,hockey)	0	1	2
2. HOBBIES' CLUBS (e.g., chess, sewing)	0	1	2
3. ETHNIC GROUP (e.g., society, group relating to your nationality)	0	1	2
4. RELIGIOUS GROUP (e.g., worship, meetings)	0	1	2
5. LESSONS (e.g., instrument, voice, crafts)	0	1	2
6. POLITICAL/SPECIAL ISSUES (e.g., Disarmament, Rights)	0	1	2
7. OTHER:______________________ (please specify)		12	

Informal(Non-University)

1. GET-TOGETHERS with one or more friends (e.g., visit, coffee social, dinner out)	0	1	2
2. SOCIAL GROUP ACTIVITIES (e.g., tennis, YMCA activities, curling, cards, dance)	0	1	2
3. DATE (if single) OR: SPECIAL OUTING	0	1	2
4. SPORTS EVENT, as a spectator (e.g., Oilers)	0	1	2
5. DRAMA (e.g., Citadel theatre, films, etc.)	0	1	2
6. MUSIC PRESENTATIONS (e.g., Jubilee Auditorium, Symphony, etc.)	0	1	2
7. OTHER:______________________ (please specify)		1	2

Formal (University)

0 = Never attend	1 = Attend sometimes	2 = Attend regularly

1. FACULTY-RELATED MEETING	0	1	2
2. AREA-OF-SPECIALTY MEETING (e.g., Teaching)	0	1	2
3. SPORTS CLUB (e.g., Judo, skiing, etc.)	0	1	2
4. INTERCOLLEGIATE ATHLETICS (e.g., Track & Field, hockey team, etc.)	0	1	2
5. HOBBIES CLUB	0	1	2
6. ETHNIC GROUP	0	1	2
7. RELIGIOUS GROUP (e.g., Chaplaincy, Meditation Group)	0	1	2
8. MUSIC GROUP (e.g., Chior, Band, etc.)	0	1	2
9. SPECIAL LECTURES, debates, campaigns	0	1	2
10. OTHER:____________________________ (please specify)		1	2

Informal (University)

1. GET-TOGETHERS with university peers (e.g., lunch, coffee, etc.)	0	1	2
2. SOCIAL GROUP ACTIVITIES (e.g., class party, residence socials, etc.)	0	1	2
3. SPORTS EVENT, as a spectator (e.g., U of A Bears)	0	1	2
4. RECREATIONAL ATHLETICS (e.g., swimming, aerobics, intramurals, etc.)	0	1	2
5. DRAMA (e.g., SUB theatre)	0	1	2
6. MUSIC PRESENTATIONS (e.g., Convocation Hall)	0	1	2
7. OTHER:________________________ (please specify)		1	2

-9-

Some students would like more time for extra-cirricular activities on campus. Others wish to devote more time and energy to their studies. For each of the university-related areas below, circle the number that best describes YOUR PREFERENCE as compared to your present situation. Use this code:

1 = I want to spend MORE time TO 5 = I want to spend LESS time

	More time				Less time
1. ACADEMIC:					
a) classroom discussion	1	2	3	4	5
b) study	1	2	3	4	5
c) assignments	1	2	3	4	5
2. INFORMAL:					
a) social activities	1	2	3	4	5
b) sports events	1	2	3	4	5
c) drama events	1	2	3	4	5
d) music events	1	2	3	4	5
3. FORMAL:					
a) special lectures	1	2	3	4	5
b) interest groups (includes hobby, ethnic, religious, and music groups)	1	2	3	4	5
c) competitive sports (as participant)	1	2	3	4	5

H. CLASSROOM INSTRUCTORS

Your classroom instructors play an important role in your academic program. Whether they are present during classroom hours or not, and whether they are readily available or not may affect your academic progress to a large extent.

1. For EACH of your instructors of this semester, answer the following questions:

a) About how often have you had contact with him/her regarding an academic or problem issue in the past four (4) weeks?

b) How approachable do you find him/her (e.g., to discuss a problem) Use this code:

Number of times seen in 4 weeks:	1 = Very approachable		3 = Average		5 = Not approachable
Instructor					
# 1 - __times	1	2	3	4	5
# 2 - __times	1	2	3	4	5
# 3 - __times	1	2	3	4	5
# 4 - __times	1	2	3	4	5
# 5 - __times	1	2	3	4	5
# 6 - __times	1	2	3	4	5
# 7 - __times	1	2	3	4	5

2. How well do MOST of your instructors communicate their lectures, course requirements, etc., to YOU? Check one:

(1)__Very clearly (2)__Clear (3)__Fair (4)__Not very clearly (5)__Poorly

3. Please comment on your answer to #2. An example will be helpful:

____

____

____

I. INTEGRATION AT THIS UNIVERSITY

Adjustment to university life requires time and energy for most students. Many challenges face students in September, such as coursework, class discussions, study habits, social interactions, physical exercise programs, and other activity involvements.

1. Circle the number that best represents how you would rate YOUR ADJUSTMENT in the following areas. Use this code:

1 = I am doing very well **TO** 5 = I am having much difficulty

How would you rate yourself in the following:	Very Well				Much Difficulty
1. amount of time it takes/took to get use to university life	1	2	3	4	5
2. study skills and habits.	1	2	3	4	5
3. interaction in class (e.g., discussions, asking questions, etc.)	1	2	3	4	5
4. ability to make conversation with classmates	1	2	3	4	5
5. interaction with university peers in social activites	1	2	3	4	5
6. ability to assert myself in getting my academic needs met (e.g., talking with instructor, obtaining notes, etc.)	1	2	3	4	5

2. On the next page you are asked to compare yourself with:

a) students with disabilities (even IF you have a disability), and
b) students without disabilities (even IF you don't have a disability).

You may not know either group well. Please answer to the best of your knowledge.

a) Compare yourself with students who have a disability. Circle the number that best represents how you feel YOU are doing as compared to them in the following areas. Use this code:

1 = I am doing very well TO 5 = I am having much difficulty

How would you rate yourself in the following:

	Very Well				Much Difficulty
1. amount of time it takes/took to get use to university life	1	2	3	4	5
2. study skills and habits	1	2	3	4	5
3. interaction in class (e.g., discussions, asking questions, etc.)	1	2	3	4	5
4. ability to make conversation with classmates	1	2	3	4	5
5. interaction with university peers in social activites	1	2	3	4	5
6. ability to assert myself in getting my academic needs met (e.g., talking with instructor, obtaining notes, etc.)	1	2	3	4	5

b) Compare yourself with students who do not have a disability. Circle the number that best respresents how YOU are doing as compared to them in the following areas. Use the above code.

1. amount of time it takes/took to get use to university life	1	2	3	4	5
2. study skills and habits	1	2	3	4	5
3. interaction in class (e.g., discussions, asking questions, etc.)	1	2	3	4	5
4. ability to make conversation with classmates	1	2	3	4	5
5. interaction with university peers in social activites	1	2	3	4	5
6. ability to assert myself in getting my academic needs met (e.g., talking with instructor, obtaining notes, etc.)	1	2	3	4	5

3. a) How do you see yourself in general? Check one:

___Disabled (1) ___Nondisabled (2) ___Disabled part of the time (3)

b) Please explain:____

____

4. a) How do you see yourself in relation to university? Check one:

___Disabled (1) ___Nondisabled (2) ___Disabled part of the time (3)

b) Please explain:____

____

THANK YOU FOR YOUR TIME AND ENERGY.

PLEASE RETURN THE QUESTIONNAIRE BEFORE YOU LEAVE.